Plasmon

The Leader in Professional
Data Archival Solutions

The Plasmon G-Series

G164 - G638 Libraries ~ UDO/MO Drive

User Manual

P/N 800-102333-00 F

PREFACE

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Revision History

Revision	Date	Description
A		Initial release.
B	August, 2001	Updated content.
C	November, 2002	Reformatted document. Changed document part number from 305291-000 to 97705167.
D	August, 2004	Updated format. Revised Safety Agency information. Added UDO.
E	April, 2007	Revised Safety Agency information. Added RoHS. Changed PN for this document from 97705167 to 800-102333-00. Updated for UDO2, added WEEE.
F	February, 2008	Updated Drive Cleaning Cartridges section. Reformatted Library Status Menu Selections table. Updated Maintenance Mode Menu Selections table. Added a new Factory Default SCSI ID Settings table in Appendix B.

NOTE

The most current information about this product is available on the Plasmon web site (www.plasmon.com).

Conventions Used

WARNING

A **WARNING** is used to alert the reader to situations or conditions that could potentially result in personal injury, fire hazard, or equipment damage.

CAUTION

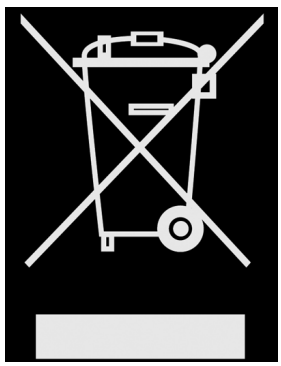
A **CAUTION** is used to warn of undesirable procedures, or of situations in which equipment damage could result.

NOTE

A **NOTE** is used to emphasize an area of text or to provide additional information.

WEEE Compliance

Plasmon products with the Waste Electrical and Electronic Equipment Directive (WEEE) label, shown below, can be shipped back to Plasmon for proper disposal of hazardous components. Please contact Plasmon Technical Support at the locations listed inside the back cover of this manual for the proper procedure.



Product Warranty

This Plasmon® library is warranted free from defects in materials, parts, and workmanship and to conform to the current product specification upon delivery. For the specific details of your warranty, refer to your sales contract or contact the company from which the library was purchased.

The Plasmon quality system is in compliance with and registered to ISO9001:2000. All products are assembled from new or remanufactured parts.

The warranty for the library shall not apply to failures of any unit when:

- The library is repaired by anyone other than Plasmon personnel or approved agent.
- The library is physically abused or is used in a manner that is inconsistent with the operating instructions or product specification defined by Plasmon.
- The library fails because of accident, misuse, abuse, neglect, mishandling, misapplication, alteration, faulty installation, modification, or service by anyone other than the factory service center or its approved agent.
- The library is repaired by anyone, including an approved agent, in a manner that is contrary to the maintenance or installation instructions supplied by Plasmon.
- The Plasmon serial number tag is removed.
- The library is damaged because of improper packaging on return.

CAUTION

Returning the library in unauthorized packaging may damage the unit and void the warranty.

If problems with the library occur, contact your maintenance organization; do not void the product warranty by allowing untrained or unauthorized personnel to attempt repairs.

WARNING

Untrained personnel operating the library may create dangerous situations. This could lead to physical harm to the operator, data loss, and/or disabling of the library system.

Please review and observe all safety rules concerning the operation of the library.

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CHAPTER 1
PRODUCT OVERVIEW

General Information

The Plasmon RoHS compliant G-Series libraries make multiple 5.25 inch UDO™ (Ultra Density Optical) media available to computer systems for reading or writing. These libraries have media storage capacities ranging from 164 to 638 media, providing up to 38.2TB of data storage. Media is easily added or removed through an automated mailslot located above the library's front door. These libraries have a media transport element (MTE) with a dual picker, which can move two media simultaneously, to make rapid media exchanges and provide increased performance in a multi-user environment.

As an option, these libraries also support standard MO (Magneto Optical) drives and media. Both UDO and MO drives and media can co-exist in the same library, on the same bus, if the library control software supports this feature.

Library Models

This manual covers the following Plasmon G-Series libraries:

Table 1. G-Series Library Models

Model	Maximum Number of Optical Media	Maximum Number of Drives
G164	164	12
G238	238	12
G438	438	12
G638	638	12

Command Processing

The library responds to SCSI commands from a host computer system to load and unload drives and move media within the library.

Media Movement

The media transport element (MTE) is used to move single media within the library between the media storage area and a drive or the mailslot. To speed the process, the MTE can move two media simultaneously.

Importing and Exporting

Single media can be imported or exported using the mailslot. The mailslot is accessible to both pickers in the media transport element (MTE). For data security, access to the mailslot function is controlled by the application software. The mailslot option may be disabled via software or front panel operation.

To manually import a media, press the open/close mailslot button on the far right of the front panel display. After inserting a media, the mailslot closes automatically. Depending on the application software it may be necessary to re-inventory media after a manual import/export.

After manually exporting a media, the operator must press the open/close mailslot button to close the mailslot.

Bulk Loading Media

Bulk loading of media is performed by using the ten slot magazine, or by opening the rear access door and placing media in each storage slot by hand. The bulk loading function may be disabled via software or front panel operation.

UDO Drive Type

Plasmon G-Series libraries can have UDO30, UDO60, or both UDO drive types installed. The drive type is indicated on the drive bezel, visible inside the library, as shown in the pictures below. The drive modules are also labeled by type inside the front door of the libraries. UDO30 drives read and write only 30GB media. UDO60 drives read and write 60GB media, and can read 30GB media.

UDO30GB UDO60GB

Figure 1. UDO Drive Types

Drive Cleaning Cartridges

A special Plasmon UDO30GB Drive Cleaning Cartridge (part number 160-101300-00) is shipped with all UDO libraries containing UDO1 drives. This cartridge should be used only as recommended by a Plasmon support technician. This cleaning cartridge is for use in UDO1 drives only. It should not be used in UDO2 drives. It provides a dry, contact cleaning method. No liquid or cleaning solution of any kind should be used with this cartridge.

A special Plasmon UDO60GB Drive Cleaning Cartridge (part number 160-103322-00) is available for UDO libraries containing UDO2 drives. This cartridge should be used only as recommended by a Plasmon support technician. This cleaning cartridge is for use in UDO2 drives only. It should not be used in UDO1 drives. It provides a dry, contact cleaning method. No liquid or cleaning solution of any kind should be used with this cartridge.

Table 2 gives the minimum firmware version required to clean UDO2 drives.

Table 2. Library Firmware Required to Clean UDO2 Drives

Libraries	Minimum Firmware Version
G164–G638	6.20(1)

(1) Plasmon always recommends using the latest firmware revision.

After each use, a check box must be marked on the appropriate side of the cartridge. When all check boxes are marked, the cartridge must be retired.

There is a demonstration/presentation explaining how to use the Plasmon UDO drive cleaning cartridge at http://www.plasmontech.com/customer/player.html/.

UDO Media

The Plasmon G-Series libraries use UDO media with either 30GB or 60GB capacity, depending on the UDO drive type. These are available in true Write Once, Rewritable, and Compliant Write Once media types. Compliant Write Once media provides for selective data destruction for security purposes.

UDO media is not compatible with MO drives, and MO media is not compatible with UDO drives. The media transport element (MTE) in the library identifies the media type and does not try to insert incorrect media into a drive.

Data is written to and read from a disk enclosed within a carrier cartridge. If the library has the optional barcode reader, a barcode label on the cartridge identifies it to the library system software.

Figure 2. UDO Media

Write Protecting UDO Media

To write protect one side of the media, slide the tab on that side in the direction of the protect arrow as shown in the figure below. There is a write protect tab on each side of the disk. When a side is protected, the Write Protect window is open.

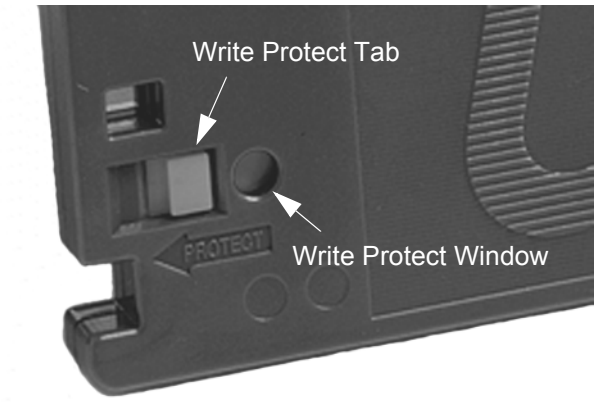


Figure 3. Write Protecting UDO Media

Bar Code Label for UDO Media

For more detailed information about bar code data and how it is read, refer to the *G-Series SCSI Reference Manual.*

The optional bar code scanner supports Code 39 bar code symbology, and the Biased - Double Bar Code (Type 2) label format.

Never place a label anywhere on the media except in the specified “label area”, as this may interfere with the proper handling of the media in the drive or the media transport element (MTE).

CAUTION

Do not write on, cover, or obscure the bar codes on a media. Doing so may cause the system to malfunction.

Biased - Double Barcode (Type 2) is the only appropriate label format for G-Series libraries.

The barcode must be approximately centered along the outside edge of the media so the alphanumeric characters in the center read properly when the A side of the media is up. This barcode configuration is done with two barcodes - one on each end of the label. The Label is 4.9" (12.5 cm) long with seven characters. Bar codes of this type are available from Tri-Optic (www.tri-optic.com), part number 1801-47PA.

Figure 4. Type 2 Barcode Label Format and Placement

NOTE

When ordering barcode labels make sure to get a unique sequence of numbers.

UDO Media Care and Handling

To maintain maximum reliability, the operator should take the time to inspect each media cartridge used.

CAUTION

Always condition the media to the normal operating temperature of the room before using them.

Improper handling or an inappropriate environment can damage the media. To ensure continued reliability:

- When media is loaded into the library, or when handling media, ensure that the cartridge case is clean. Dirty media cartridges can cause problems in loading or the loss of written data. If a cartridge case is dirty, wipe with a lint free cloth.
- Do not carry media loosely (for example, in a box or basket).
- Do not load damaged media into a drive or a library. Damaged media can interfere with read/write reliability.
- Never touch the disk. Opening the cartridge door and touching the disk may interfere with read/write reliability.
- Do not expose the media to moisture or direct sunlight.
- Do not expose the media to excessive heat (the allowable temperature range is 5 to 55°C).

Major Hardware Components

Refer to the following figures when reading the information in this section.

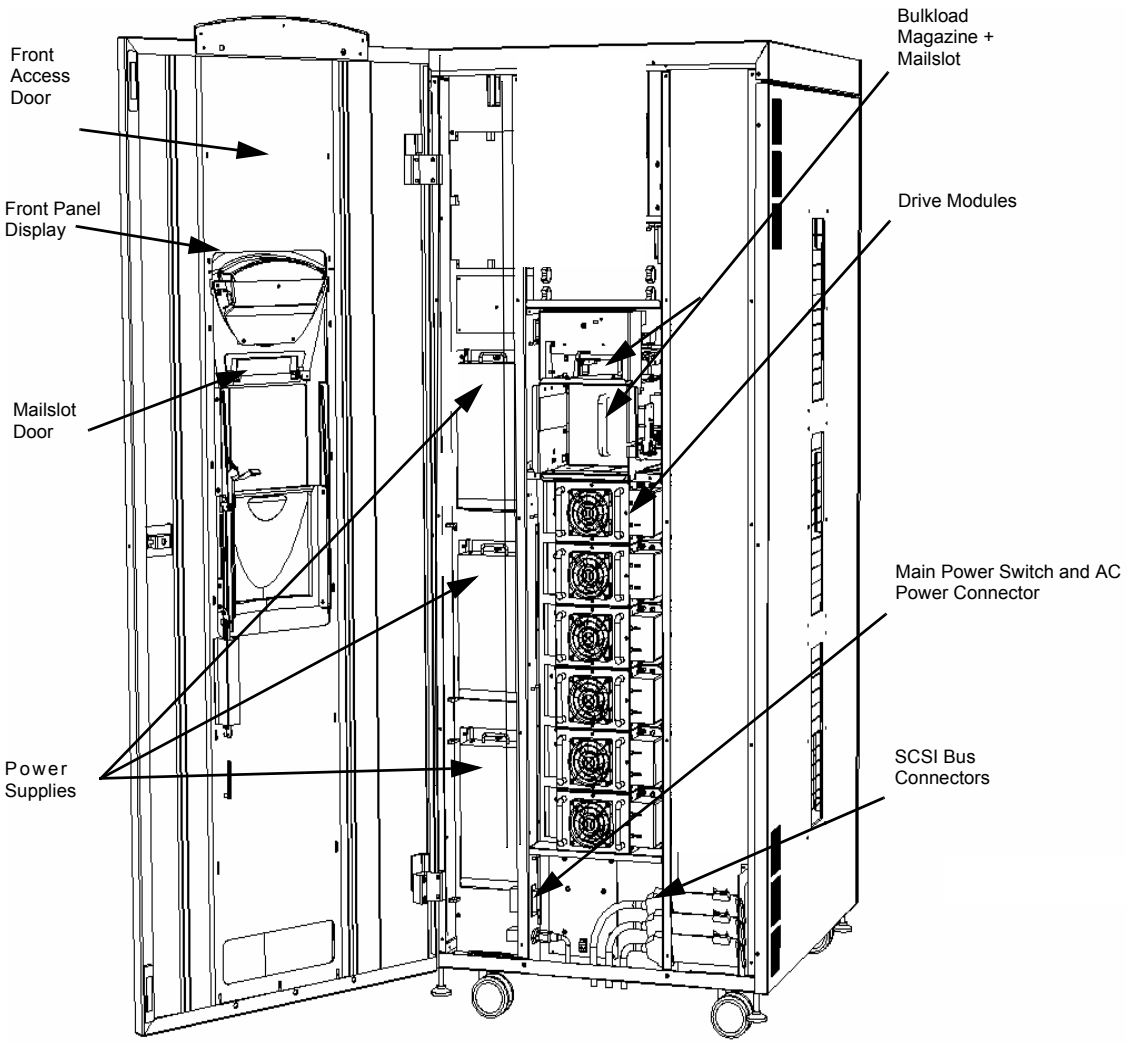


Figure 5. G164 - G238 Libraries, Front View

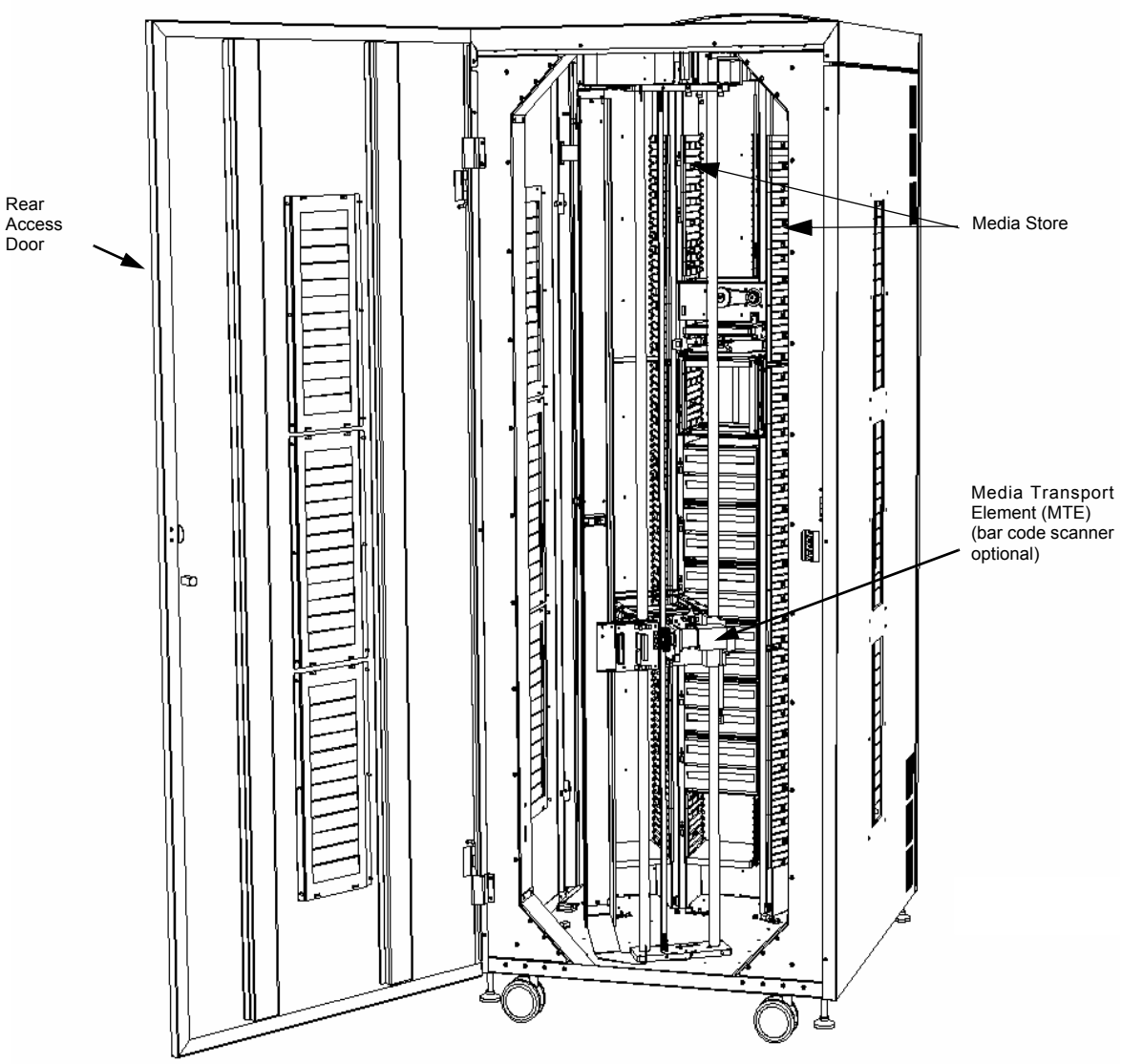


Figure 6. G164 - G638 Libraries, Rear View

Mailslot

The mailslot provides access for adding or removing individual media. This function may be disabled via software or front panel operation.

Front Panel Display

The front panel display consists of the keypad and display controller, which provide the operator interface to the system. Also called the operator panel, it is used to display tests, modes, error codes and other user related messages.

Media Store

The media store holds each media in place. It consists of two vertically arranged plates with plastic grooved guide panels that hold each media.

Bulk Load Magazine

The bulk load magazine is capable of importing and exporting up to ten media.

Media Transport Element (MTE)

The media transport element (MTE) moves media between storage locations and the disk drives, and consists of the picker and flip assembly.

Drives

The optical drives in the library allow reading and writing of data. They are fully tested to work with the library. This library can use both UDO30 and UDO60 drives, MO drives, or a mix of these if the driver software supports this feature.

Contact Plasmon for the latest drive updates.

SCSI Interface

The SCSI interface provides for connection between the library and a host computer. The interface to the library is an LVD SCSI bus using a 68 pin high density connection.

CAUTION

Connecting the wrong host bus adapter to the library can damage the adapter or library.

The SCSI Interface can be configured into single, dual, or triple SCSI buses as explained later in this manual.

Front Access Door

The front access door is used to gain access to the drive modules, power supplies, main power switch, AC connection, SCSI connections, and electronic components.

Rear Access Door

The rear access door is used to gain access to the robotics or to hand place media in storage slots for initial bulk loading. This door incorporates an interlock system requiring a key.

CHAPTER 2
LIBRARY INSTALLATION

Getting Started

This chapter provides a guide to installing a Plasmon G-Series library and the procedures necessary to quickly get the library on-line.

Unpacking the Library

Please follow the unpacking instructions found in the shipping enclosure. Verify that all listed components are present. Save all packing material in case it is ever necessary to ship the library.

Before powering on the library:

1. Using the enclosed key, open the rear door of the library.
2. Carefully remove all the shipping restraints from the media transport element (MTE) attached to the lift rails inside the library.

CAUTION

Use minimum force when removing the restraints and packing material from the MTE.

Library Position

Position the library in a location that allows both the front and rear door to open completely without obstruction. Allow at least a two inch clearance on the sides for ventilation. Lower the leveling feet to the floor to stabilize the library.

Library Environment

To ensure long term reliability, operate the library only between 10° to 32°C (50° to 90°F) and 10% to 90% relative humidity. The media and drives require a clean environment. Excessive dust and dirt can lead to data loss, and increase service calls.

Space Planning

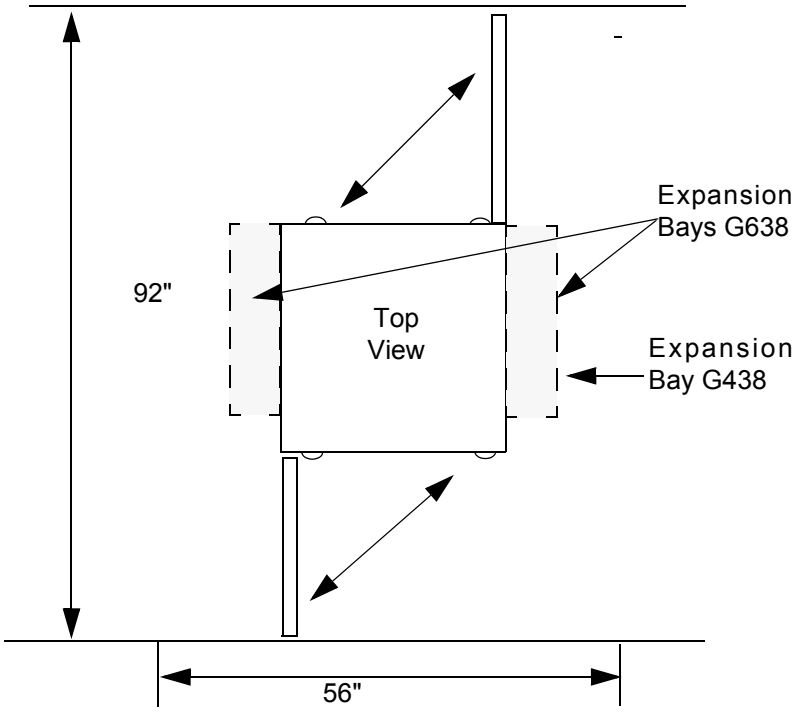


Figure 7. Space for G164 - G638

Loading Media

Use only Plasmon approved ISO standard 5.25 inch UDO or MO media in the library, depending on the type of drives installed in the library. Media is loaded into the library using one of three methods.

- **Mass Loading (recommended):** This method is intended as a one time solution to mass load the entire library with media when the library is off-line and there is no power applied.
- **Automated Mailslot:** This is intended for importing and exporting a single piece of media while the library is on-line.
- **Ten Slot Magazine:** This is intended for importing and exporting up to ten pieces of media in a removable bulk load magazine while the library is on-line.

Mass Loading (Recommended)

Ensure that the library is turned off and that the power cable is disconnected from the wall outlet.

1. Using the enclosed key, open the rear door of the library system.
2. Insert the media into the slots with the shutter end of the media going in first.

NOTE

There are no requirements for loading media in a specific order. Plasmon recommends filling the storage slots in numerical order, starting with slot number one. See the storage slot map on the inside of the rear door, or the diagrams later in this chapter, for the storage slot numbering system.

3. Insert the media completely into the storage slot until it contacts the back of the slot.

Figure 8. Mass Loading Media

4. Continue loading all media into the storage slots.
5. Close and lock the rear door.
6. Reinventory the media by selecting **Set Up Library** > **Offline Operations** > **1 Scan Elements**.

Automated Mailslot

The automated mailslot is the default method for importing and exporting single media while the library is on-line.

Figure 9. Using the Mailslot

Using the front panel display, a single piece of media can be imported or exported through the mailslot door. Once the appropriate button is selected on the front panel, the door opens automatically and a media carrier extends outward to accept a media. Insert a piece of media into the carrier so that the shutter end of the cartridge goes in first. Select the appropriate button on the front panel display to close the mailslot door.

The library management software is also used to open and close the mailslot door. The host computer handles this operation.

CAUTION

Do not attempt to load a media in the mailslot until the media carrier is extended through the open door. Never open the mailslot door manually.

Ten Slot Magazine

The ten slot bulk load magazine loads ten pieces of media at one time. To use the magazine:

1. Release the magazine from the library using the Release Magazine menu option on the front panel display. Refer to *Chapter 3, Menu System* for information.
2. Remove the magazine from the library.
3. Open the media catch lever.
4. Load media into the magazine.
5. Close the media catch lever.
6. Replace the magazine into the library.

Inside the Front Door

The power switch, the power cable connector, and the SCSI connectors are accessed through the front door which opens from the right.

Power Connection

Route the power cable through the bottom of the library to the power cable connector. Using the supplied cable restraint, attach the cable and secure to the library with the phillips head screw provided.

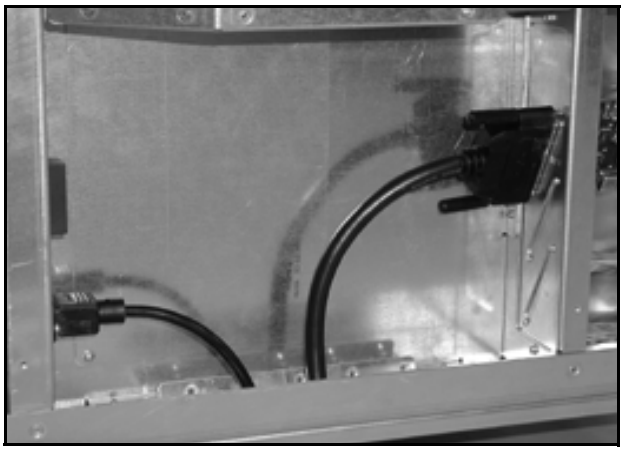


Figure 10. Power and SCSI Connection

The power cable can be plugged into any standard 120 volt to 240 volt wall outlet. The library uses an auto-ranging power supply.

SCSI Connection

The library requires a host computer with a dedicated LVD SCSI host bus adapter. Power off the library and disconnect from the wall outlet before connecting the SCSI cable. Route the SCSI cable through the bottom of the library to the appropriate library SCSI connector.

NOTE

The SCSI buses are terminated inside the library. It is not necessary to add a terminator.

Plasmon recommends using SCSI cables that conform to SCSI-3 specifications with high density 68-pin connectors. The following table shows the allowable cable lengths for each of the SCSI interfaces.

Table 3. External SCSI Cable Lengths

SCSI Interface	Max Allowable External Cable Length
LVD (with UDO, MO, or mixed drives)	39 ft. (12 m)

NOTE

G-Series libraries without an External SCSI Interface Circuit Board (not available in the US) still have an LVD SCSI interface, but have a reduced maximum external cable length of 30 ft. (9.14 m). These models must be UDO only.

Initial Power On

Turn on the power switch and close the front door.

The library takes a few minutes to initialize. When the process is completed, the front panel indicates that the library is on-line and ready for operation.

Figure 11. Front Panel Display at Power On

Host Computer

It may be necessary to reboot the host computer for it to recognize the library as a new device.

Some modifications to the host hardware or operating system may be necessary for it to recognize the library. These modifications may include patches, driver updates, or modifications to the configuration files. Please consult the host hardware or operating system documentation to see if any of these modifications are necessary. Then if necessary, contact the hardware or software vendor for the appropriate patch or update.

Identifying Storage Columns and Slots

Inside the rear door of each G-Series library is a diagram of the slot numbering scheme for that library. Also, refer to the slot location diagrams on the following pages for slot numbering in different libraries.

G164 Slot Configuration:

Viewing the system through the rear access door, the columns are viewed from left to right starting with column 3 (far left), and the storage slots are numbered in a zig-zag pattern from the top down, with slot 1 starting at column 3 and moving from left to right. For example, slot 2 column 4, slot 3 column 5, slot 4 column 3, etc. Drives are numbered from the top down with each module containing two drives and with drive 1 on the top. The ten slot magazine is numbered from the top down with slot one on the top.

G238 Slot Configuration:

Viewing the system through the rear access door, the columns are viewed from left to right starting with column 3 (far left), and the storage slots are numbered in a zig-zag pattern from the top down, with slot 1 starting at column 3 and moving from left to right. For example, slot 2 column 4, slot 3 column 5, slot 4 column 3, etc. Drives are numbered from the top down with each module containing two drives and with drive 1 on the top. The ten slot magazine is numbered from the top down with slot one on the top.

G438 Slot Configuration: (left expansion bay only)

Viewing the system through the rear access door, the columns are viewed from left to right starting with column 1 (far left) and the storage slots are numbered following the pattern for the 238 slot configuration for column 3, 4, and 5 and from the top down for column 1 and 2.

G638 Slot Configuration: (left and right expansion bays)

Viewing the system through the rear access door, the columns are viewed from left to right starting with column 1 (far left) and the storage slots are numbered following the pattern for the 238 slot configuration for column 3, 4, and 5 and from the top down for column 1 and 2 and also from the top down for column 6 and 7.

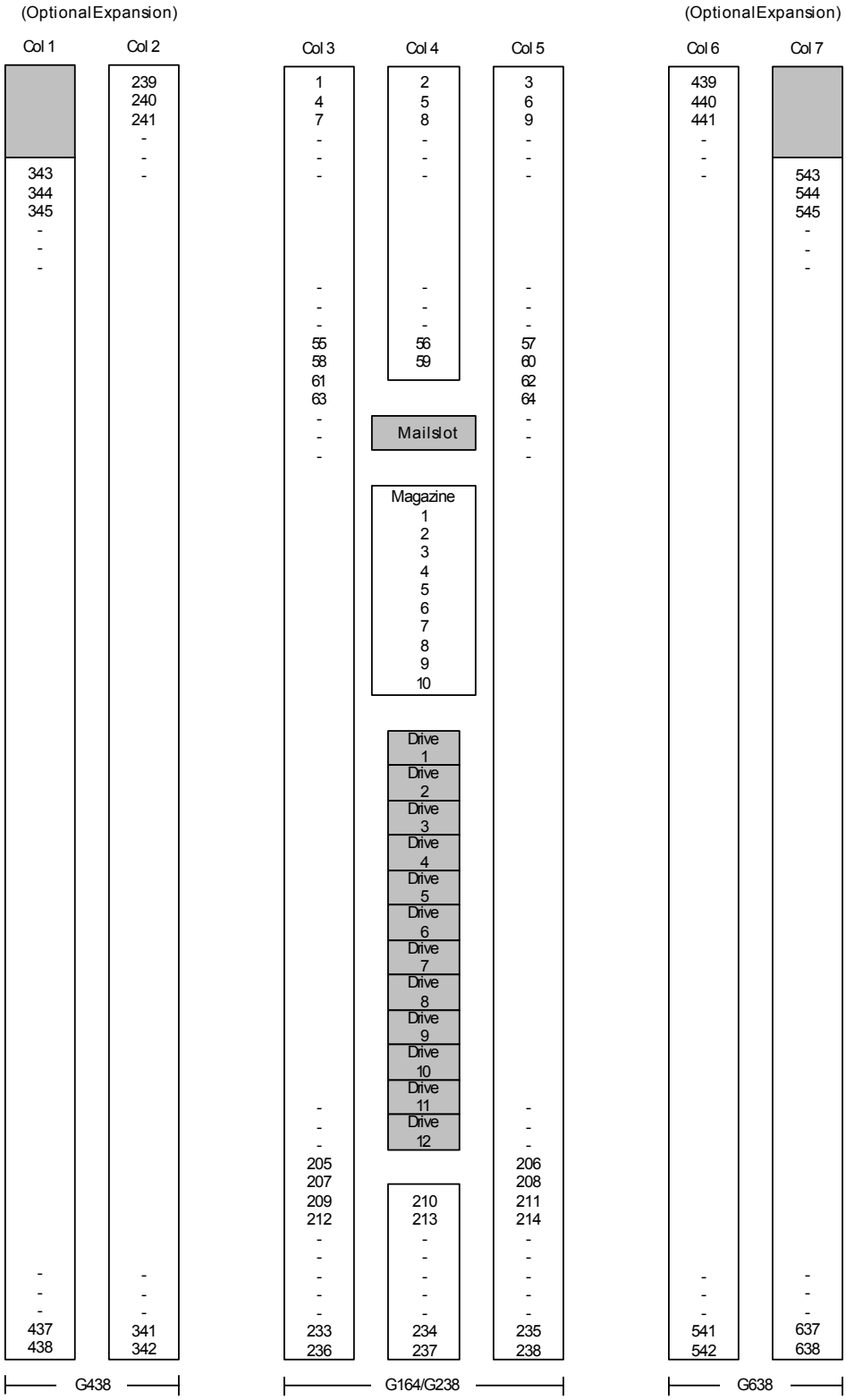


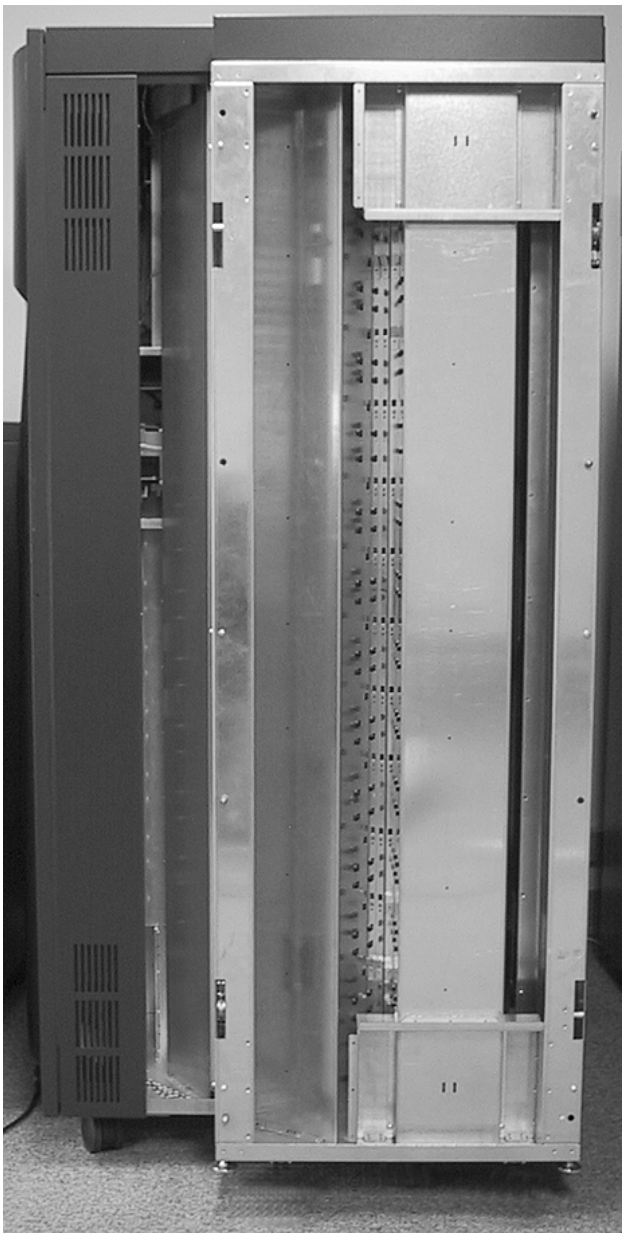
Figure 12. G164 - G638 Slot Map

G438 and G638 Bay Installation

The expansion storage bays that attach to the sides of Plasmon G438 and G638 libraries are shipped separately. The following instructions explain how to mount the bays to the main library chassis.

1. The main library chassis is shipped without side panels. Remove the side panels if upgrading a G164 or G238 library (for single bay upgrades remove left side panel only).
2. Lower the four stabilizer legs on the main library chassis.

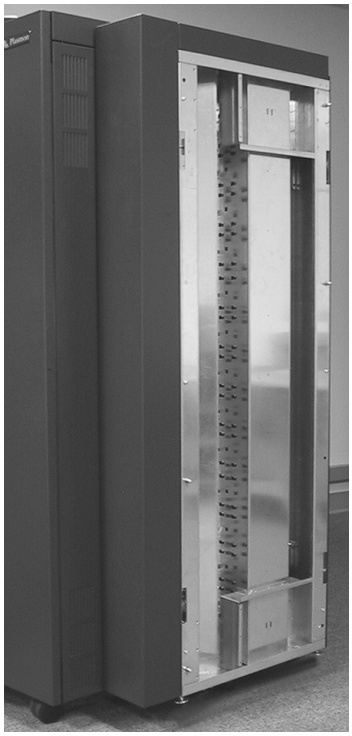
3. Position the expansion bay flush against the library chassis matching the guide pins on the chassis to the guide holes on the expansion bay.



4. Using a 5/16" hex wrench, engage the four latch hooks that hold the expansion bays to the library chassis. There are two on each side of the bay.

5. Using a #1 phillips head screw driver, attach the finish matching cover plate to the back side of the expansion bay with the color coated screws provided.

6. Attach the finish matching square column to the front of the bay by hanging it on the screw heads provided.



7. Finally, attach the finish matching side panel to the bay by hanging it on the screw heads provided.

Packing Instructions (G164 - G638)

This section is provided in case it is necessary to ship the library (without expansion bays) back to Plasmon. For instructions on how to pack the expansion bays, contact Plasmon. These procedures must be followed.

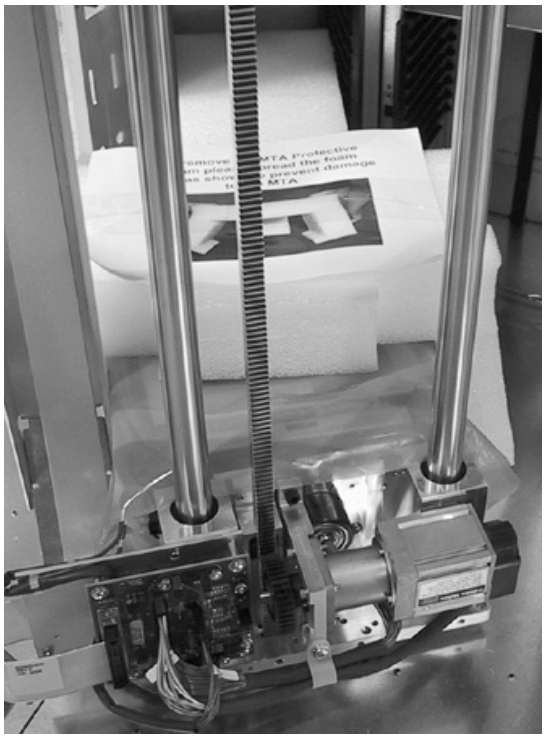
CAUTION

Plasmon libraries must be shipped in the original packaging. Shipping a unit in anything other than the manufacturers packaging voids the warranty.

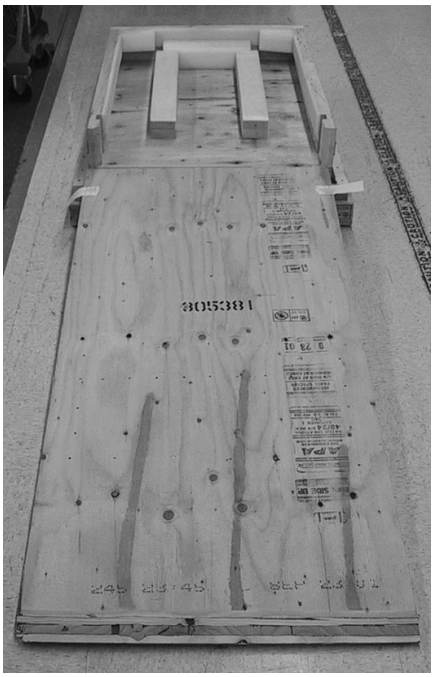
The library must be parked before packing the system. Remove all media before shipping the library. The storage element detents are not strong enough to hold the media during shipment.

Follow these steps to pack the library for shipping:

1. Move media transport (MTE) to bottom center of library.
2. Cover MTE with anti-static bag.
3. Clamp foam support over MTE. Make sure foam tabs on support are securely underneath MTE.



4. Place skid ramp on ground in front of packaging skid. Connect velcro on ramp to velcro on packaging skid.



5. Using two people, roll library onto packaging skid. Library's front door goes onto skid first. Push on bottom of library when rolling onto packaging skid.
6. Cover library with the ant-static bag, and insert back edge-board of skid into slots with foam protected side toward library.

7. Remove ramp from skid and place upright in slot provided behind library. Close velcro fasteners.

8. Place top foam over library, and fit in place.

9. Place cardboard sleeve over library, and place lid on top.

10. Finally, strap box to skid for shipping.

Packing Instructions (G438 - G638 Expansion Bays)

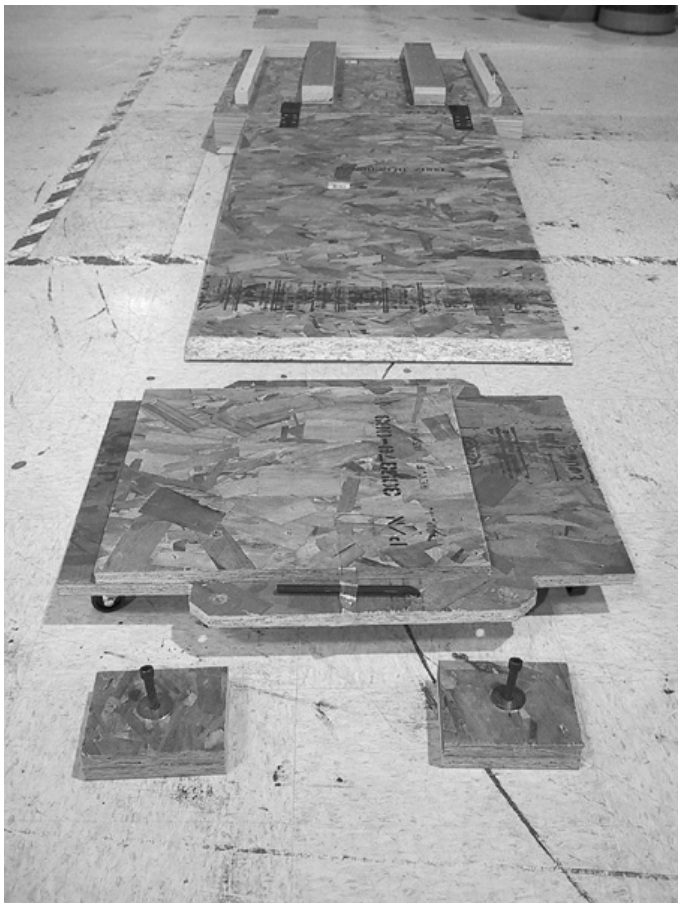
This section is provided in case it is necessary to ship the bays to another location, or back to Plasmon. These procedures must be followed.

CAUTION

Plasmon libraries and bays must be shipped in the original packaging. Shipping a unit in anything other than the manufacturers packaging voids the warranty.

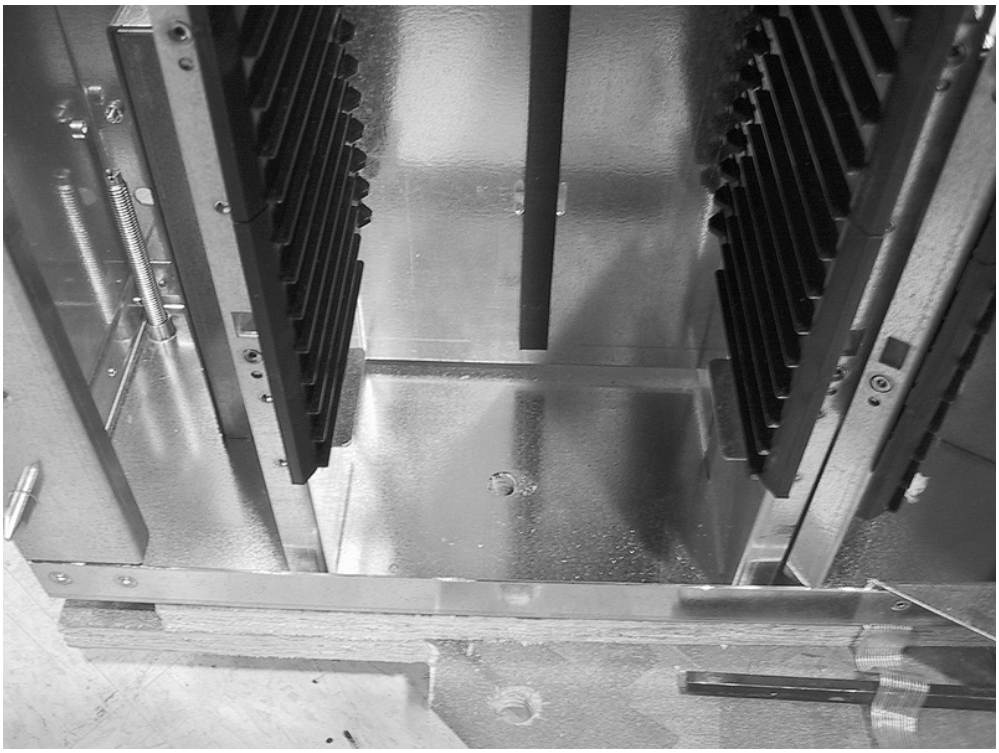
Follow these steps to pack the bays for shipping:

1. Lay out the pallet & ramp, wheeled skid, and mounting blocks as shown in the picture below. Ensure the ramp is securely attached to the pallet with the velcro strips.

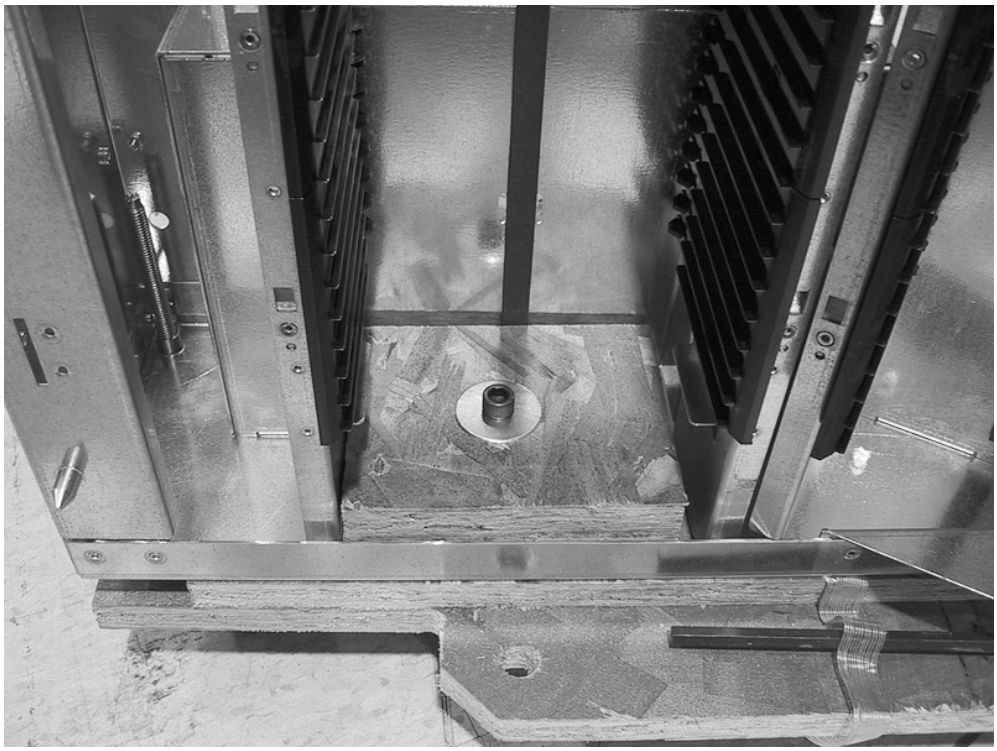


2. Place the first bay on the wheeled skid as shown in the picture below.

3. Position the bay so the mounting bolt hole lines up as shown below.



4. Use a mounting block and a hex head bolt to secure the bay to the wheeled skid.



5. Hang the painted skin and spacer column on their mounting screws as shown.

6. Secure a second bay in the same way, but facing the opposite direction.

7. With two people steadying the bays, roll the wheeled skid up the ramp onto the pallet. Push at the bottom to avoid tipping.

8. Secure the wheeled skid to the pallet with four hex head bolts (two on each side).

9. Cover each bay with an anti-static bag, and tape the ramp in an upright position as shown.

10. Place the shaped foam topper on the bays. Make certain the center spacer foam fits down between the bays. Then slid the cardboard box over the bays and tape the top flaps closed.

11. Finally, strap box to skid for shipping.

CHAPTER 3
MENU SYSTEM

Navigating the Menu System

The Plasmon G-Series library modes and functions are controlled using four selection buttons located on the front panel. A liquid crystal display (LCD), located directly above the buttons, provides system status and other important information.

Figure 13. LCD Display Format

The **description line** displays the number and name of the mode or test when navigating menus. An ellipsis (...) following a name indicates that the selection contains submenus.

The **selection button indicators** display the function of the four buttons located directly below the indicator. A dash above a button means that no function is associated with this key. The following *LCD Symbols* table provides an explanation of each symbol.

Table 4. LCD Symbols

LCD Symbol	Meaning
	Enter a menu selection
	Exit a menu selection
	Change a mode selection
	Switch to display scroll mode
	Confirm a selection
	Decrement a numeric value or scroll display up
	Increase a numeric value
	Go to the previous menu item
	Go to the next menu item
	Open the mailslot
	Display a list of menu items
	Run a motor or execute a function
	Indicates a drive is turned off
	Indicates a media exists in an element
	Indicates the element is empty

Power Up Menu Options

The following operations can be performed at the initial power up stage:

- Entering the library's main menu system
- Opening or closing the mailslot
- Viewing error information

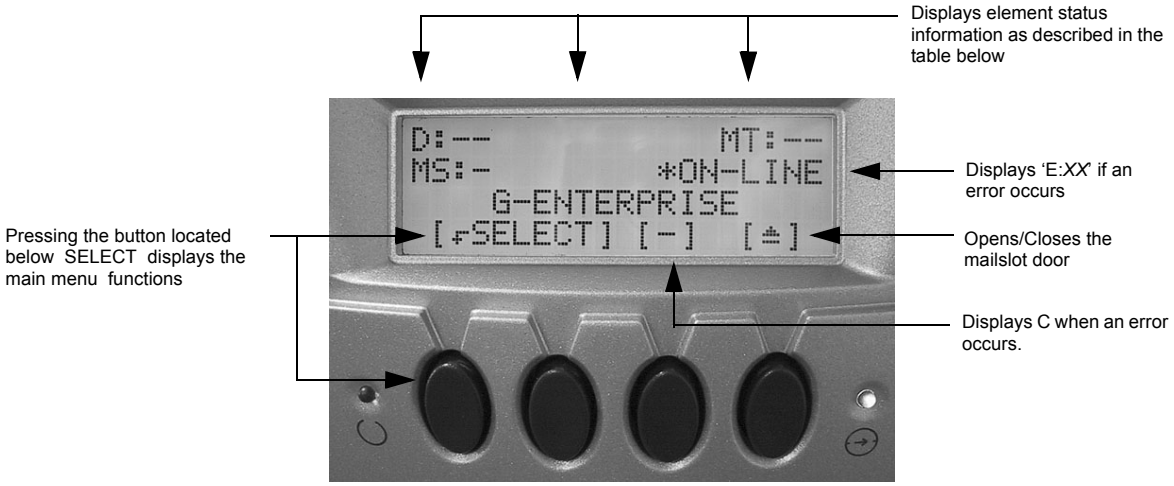

Displays element status information as described in the table below
D:--
MT:--
MS:-
*ON-LINE
G-ENTERPRISE
[SELECT] [-] [≙]
Displays 'E:XX' if an error occurs
Opens/Closes the mailslot door
Displays C when an error occurs.
Pressing the button located below SELECT displays the main menu functions

Figure 14. Power Up LCD Display

Table 5. Power Up LCD Symbols

Symbol	Meaning
D	Drive status (drive present, media present)
MT	Media Transport Element status (media present)
MS	Mailslot status (media present)
MAG	Ten Slot Magazine installed (Y or N)
—	Empty element or button not used
⬬	Media in element
•	Indicates a drive is turned off

Menu System Overview

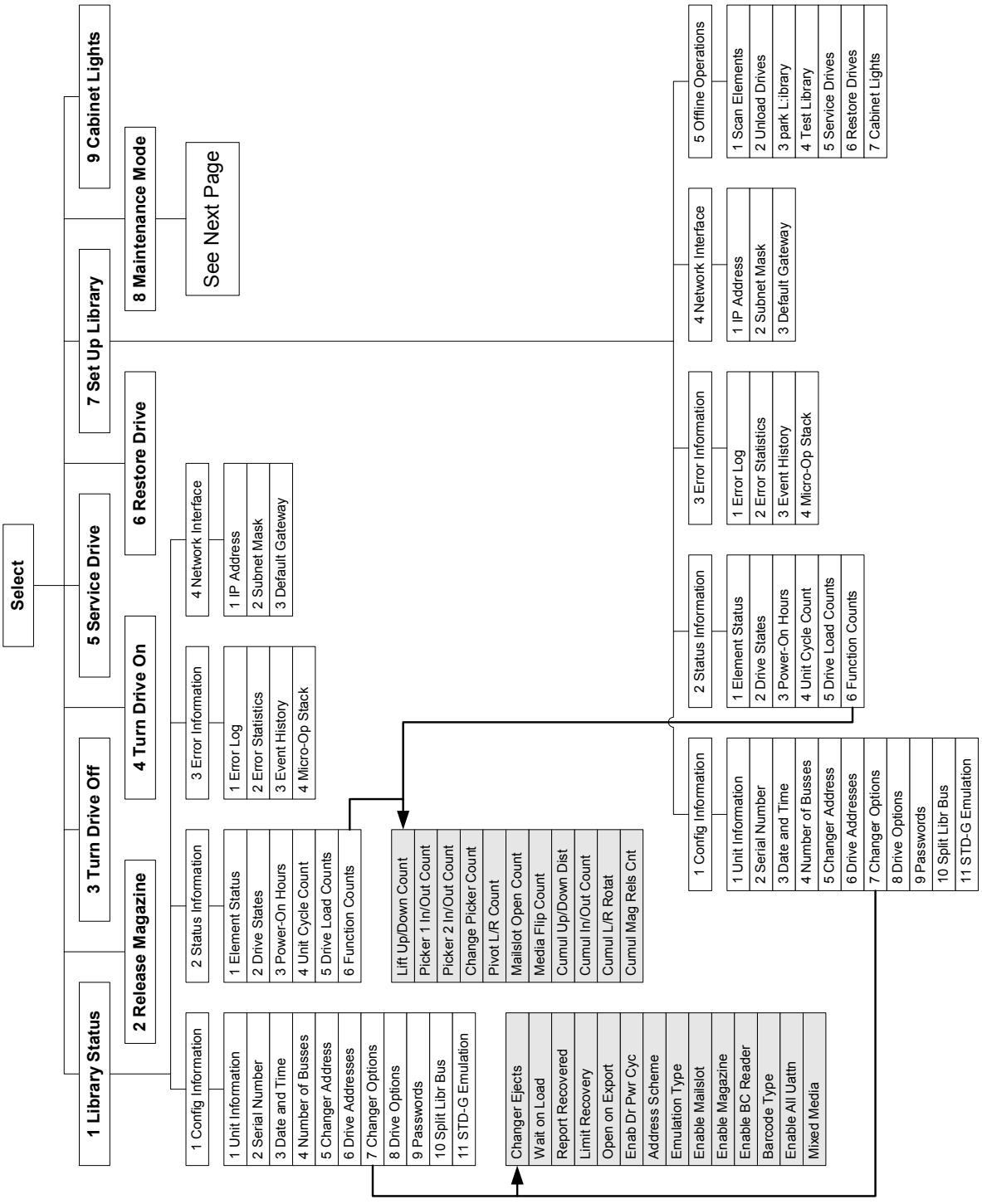


Figure 15. Menu System Overview (sheet one)

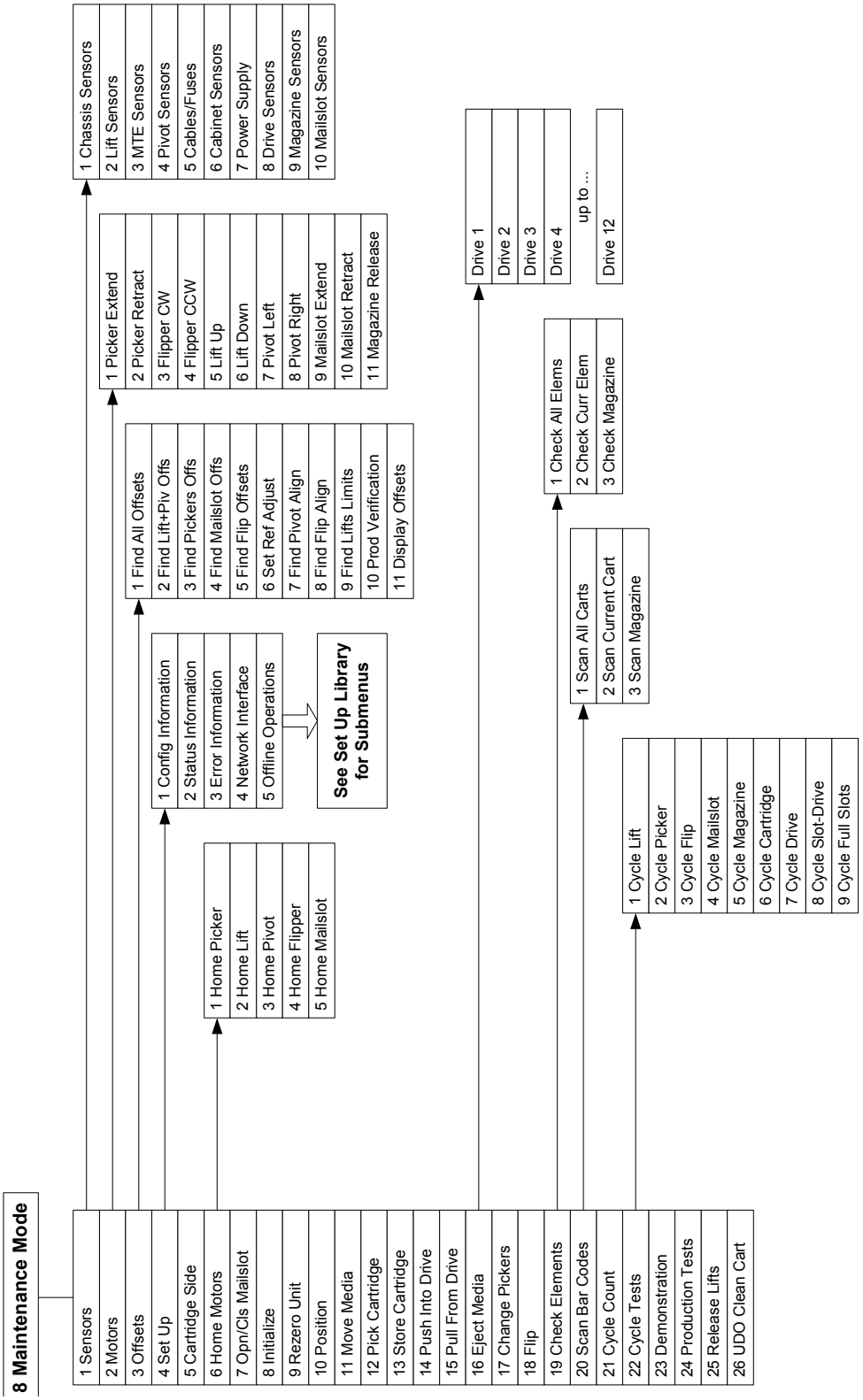


Figure 16. Menu System Overview (sheet two)

Main Menu Overview

The G-Series library front panel display menu system starts with nine top-level options. To cycle through the options at any level press [SELECT]. To enter a selection press [ ].

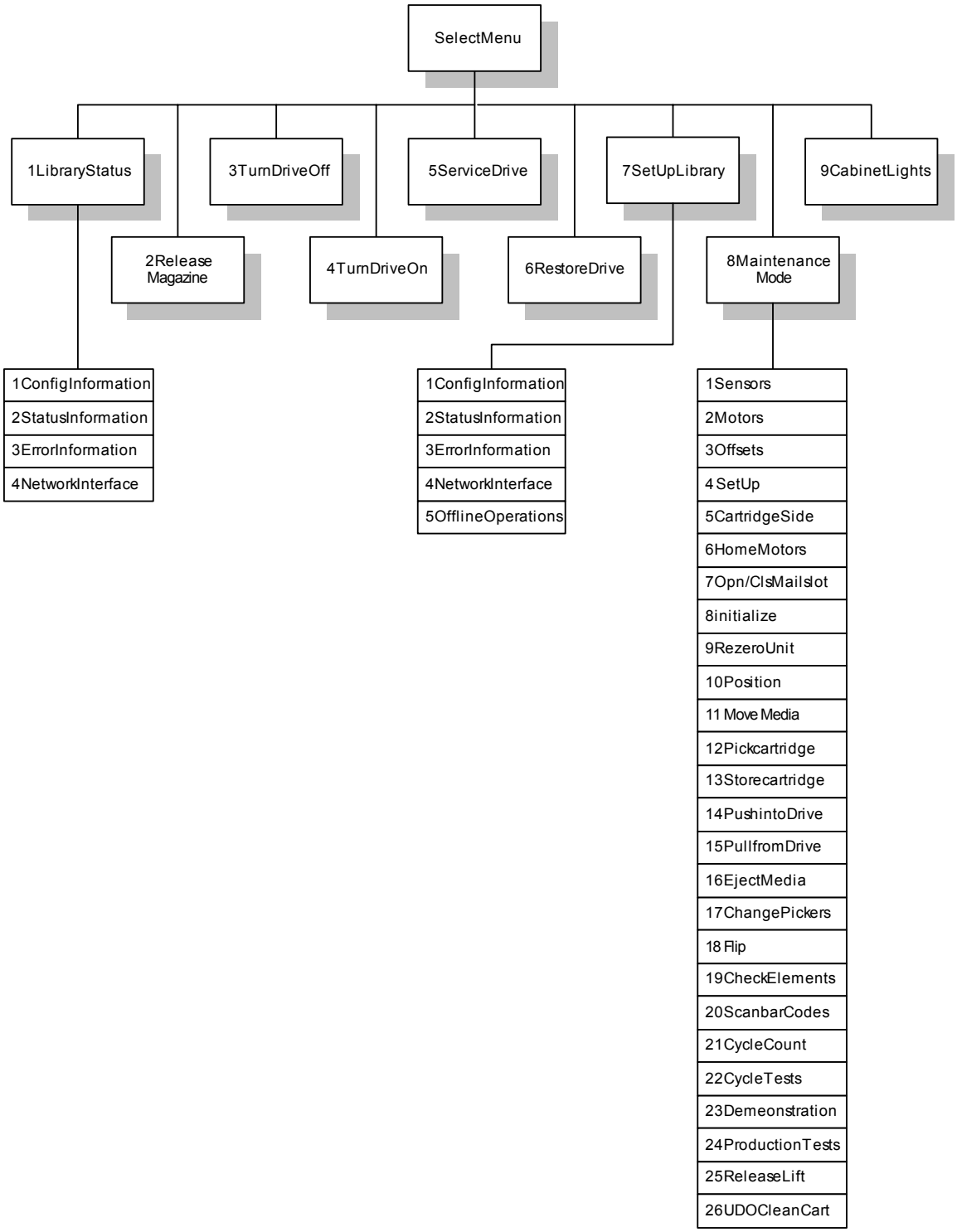


Figure 17. Main Menu Overview

Table 6. Main Menu Selections

Menu Selection	Description
1 Library Status	Allows viewing only of library settings. To make changes, use the Set Up menu.
2 Release Magazine	Use to release the magazine from the library.
3 Turn Drive Off	Use to turn off individual drives. Drives may not be hot-swapped in this mode. For password protected operations, the factory default password is "AAAA".
4 Turn Drive On	Use to turn on individual drives. For password protected operations, the factory default password is "AAAA".
5 Service Drive	Use to remove power from the drive to allow removal or replacement. For password protected operations, the factory default password is "AAAA".
6 Restore Drive	Use to restore power to the drives after removal or replacement. For password protected operations, the factory default password is "AAAA".
7 Set Up Library	Allows viewing and changing of library settings. When performing operations from the Set Up menu, the library is taken off-line.
8 Maintenance Mode	Allows testing, setting up, or configuring the library. When performing operations from the Maintenance Mode menu, the library is taken off-line. These operations are reserved for Plasmon authorized service personnel. For password protected operations, the factory default password is "AAAA".
9 Cabinet Lights	Use to turn the cabinet lights on or off.

Library Status Menu Overview

Use the Library Status menu to view the library's status only. To make changes to the library's status, use the Set Up menu.

The figure below shows the Library Status menu options.

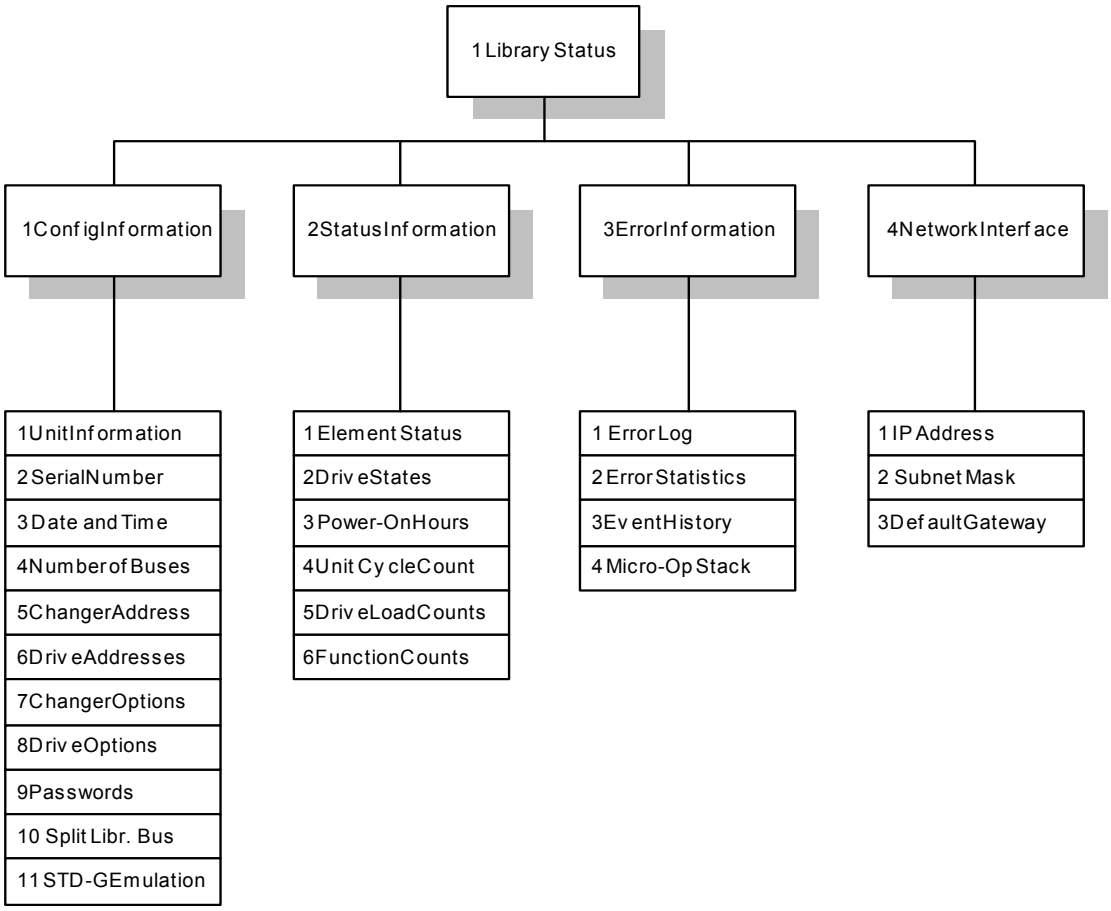


Figure 18. Library Status Menu Options

Table 7. Library Status Menu Selections

Menu Selection	Description	Factory Defaults
1 Config Information	Allows viewing only of library configuration settings.	--
1 Unit Information	To view the storage slot count, drive count, and firmware revision.	--
2 Serial Number	To view the serial number assigned to the library.	--
3 Date and Time	To view the current date and time settings.	--
4 Number of Buses	To view the number of SCSI buses the library uses.	--
5 Changer Address	To view the changer SCSI ID.	--
6 Drive Addresses	To view individual drive SCSI IDs.	--
7 Changer Options	To view changer options: Changer Ejects (Y/N) Wait on Load (Y/N) Report Recovered (Y/N) Limit Recovery (Y/N) Open On Export (Y/N) Enab Dr Pwr Cyc (Y/N) Address Scheme (1) Emulation Type (0/1) Enable Mailslot (Y/N) Enable Magazine (Y/N) Enable BC Reader (Y/N) Bar Code Type (1/2) Enable All Uattn (Y/N) Mixed Media (Y/N) The Mixed Media option does not show if STD-G Emulation is set.	 Y N N N Y N 1 1 Y N Y 2 N Y
8 Drive Options	To view drive options. Write Cache Enabl (Y/N) Verify on Write (default Y/N) DASD Inq Respons (Y/N)	 N Y N
9 Passwords	This option is not available when library is online.	--
10 Split Libr. Bus	To view configuration of library controller SCSI bus.	--
11 STD-G Emulation	To view emulation configuration of library.	--
2 Status Information	Allows viewing only of library status.	--
1 Element Status	To view which elements (slots, drives, pickers, or I/O stations) are populated by media.	--
2 Drive States	To view the power on/off state of a drive.	--
3 Power-On Hours	To view total hours of power to library. Useful for preventive maintenance. Cannot be reset.	--

Menu Selection	Description	Factory Defaults
4 Unit Cycle Count	To view total cycle count since first startup. Cannot be reset.	--
5 Drive Load Counts	To view total drive loads since last reset of count.	--
6 Function Counts	To view total function counts since last reset of count. Lift Up/Down Count Picker 1 In/Out Count Picker 2 In/Out Count Change Picker Count Pivot L/R Col Count Mailslot Open Count Media Flip Count Cumul Up/Down Dist Cumul In/Out Dist Cumul L/R Rotat Cumul Mag Rels Count	--
3 Error Information	Allows viewing only of library error information.	--
1 Error Log	To view a chronological list of last ten errors since log was last cleared.	--
2 Error Statistics	To view a list of the ten most frequent errors since list was last cleared.	--
3 Event History	To view the SCSI command event history since it was last reset. Only SCSI commands which affect library operations are recorded.	--
4 Micro-Op Stack	To view a list of operations performed for the last failing SCSI command. These micro operations include position, position and flip, pick, store, load, and unload. The list includes forward and backward operations (media movement, and undo and retry for attempted failure recovery). This log is cleared whenever the system is initialized.	--
4 Network Interface	Allows viewing only of library network interface information.	--
1 IP Address	To view the IP address set for the library.	--
2 Subnet Mask	To view the subnet mask set for the library.	--
3 Default Gateway	To view the default gateway set for the library.	--

Table 8. Set Up Library Menu Overview

Use the Set Up Library menu to change the library's status. When performing operations in the Set Up Library menu, the library is taken off-line.

The figure below shows the Set Up Library menu options.

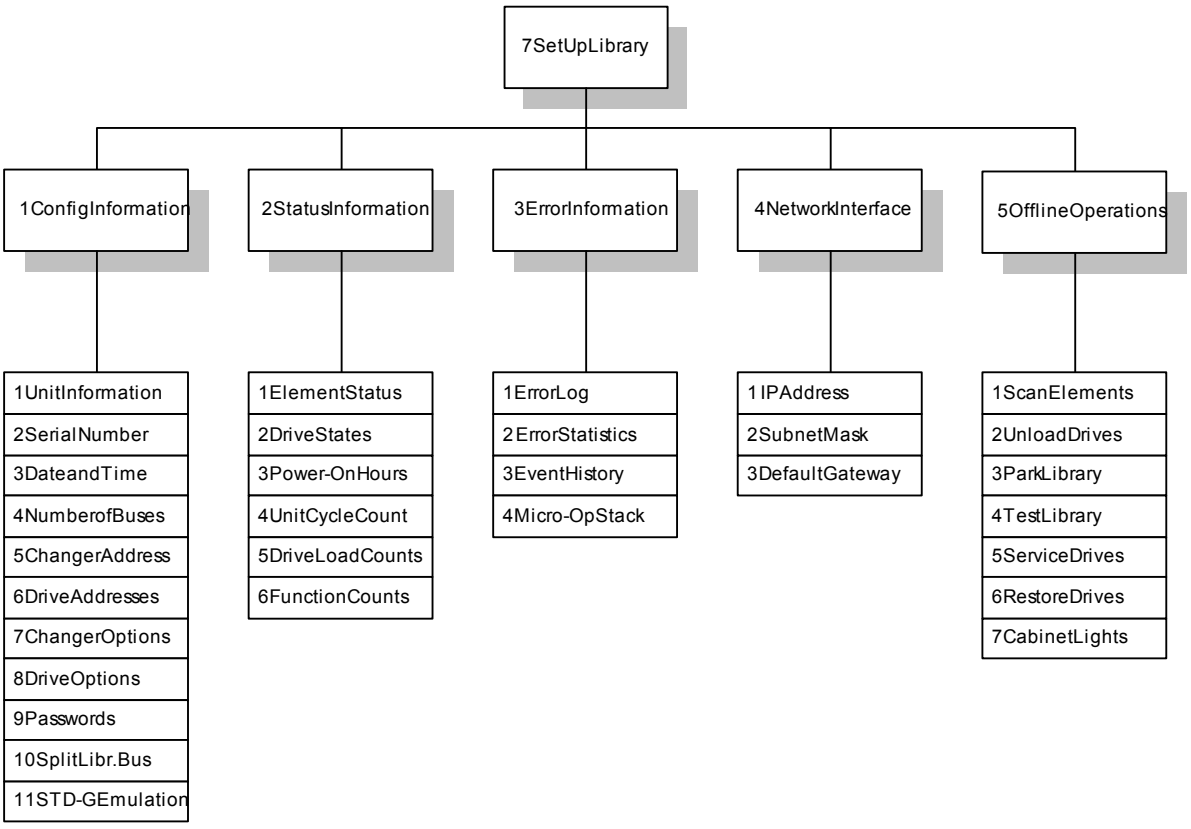


Figure 19. Set Up Library Menu Options

Table 9. Set Up Library Menu Selections

Menu Selection	Description
1 Config Information	Allows viewing and editing of library configuration settings.
1 Unit Information	To view the storage slot count, drive count, and firmware revision.
2 Serial Number	To view the serial number assigned to the library.
3 Date and Time	To view/edit the current date and time settings.
4 Number of Buses	To view/edit the number of SCSI buses in the library. Change this number if the number of host adapters is changed.
5 Changer Address	To view/set the changer SCSI ID.
6 Drive Addresses	To view/set individual drive SCSI IDs.
7 Changer Options	To view/edit changer options.
Changer Ejects	To enable library control to eject media from the drives.
Wait on Load	To cause library to wait until a drive spins up and is ready before the next command is executed.
Report Recovered	To cause library to report errors recovered from.
Limit Recovery	To cause library not to perform any transfers on a media that cannot be moved to a destination or returned to its original location. Media is left in the picker. If not set, an additional attempt is made to home all motors, check sensors and attempt to return media to its original location.
Open On Export	To cause mailslot to open automatically when media is placed in it.
Enab Dr Pwr	To cause library to cycle power to a drive that does not respond.
Address Scheme	To change the addressing for software compatibility.
Emulation Type	To emulate different libraries for software compatibility.
Enable Mailslot	To turn mailslot on for use.
Enable Magazine	To turn mailslot on for use.
Enable BC Reader	To turn bar code reader on for use.
Bar Code Type	To select bar code type I or II according to label type.
Enable All Uattn	To enable all unit attention conditions to the host computer.
Mixed Media	To enable library to support both MO and UDO media. The Mixed Media option does not show if STD-G Emulation is set.
8 Drive Options	To view/edit drive options.
Write Cache Enabl	To enable the write cache on a drive (MO drives only).
Verify on Write	To cause the library to issue a Write Verify command for all writes (MO drives only).

Menu Selection	Description
DASD Inq Response	To enable generation of the Direct Access Storage Device inquiry response string.
9 Passwords	To set or change passwords. To remove password protection from a menu selection, press the check mark without entering any letters. The factory default password is "AAAA". If a password is forgotten or lost, please contact Plasmon support.
10 Split Libr. Bus	To view/set whether the library controller has its own stand-alone SCSI bus.
11 STD-G Emulation	To view/set the standard G emulation mode. Set to “Y” for all MO library operation only.
2 Status Information	Allows viewing/editing of library status.
1 Element Status	To view/edit which elements (slots, drives, pickers, or I/O stations) are populated by media. Individual slot status can be set to full or empty.
2 Drive States	To view a drive’s on/off state.
3 Power-On Hours	To view total hours of power to library. Useful for preventive maintenance. Cannot be reset.
4 Unit Cycle Count	To view total cycle count since first startup. Cannot be reset.
5 Drive Load Counts	To view/reset total drive loads since last reset of count.
6 Function Counts	To view/reset total function counts since last reset of count. Lift Up/Down Count Picker 1 In/Out Count Picker 2 In/Out Count Change Picker Count Pivot L/R Col Count Mailslot Open Count Media Flip Count Cumul Up/Down Dist Cumul In/Out Dist Cumul L/R Rotat Cumul Mag Rels Count
3 Error Information	Allows viewing/clearing of library error information.
1 Error Log	To view/clear a chronological list of last ten errors since log was last cleared. The first on the list is the most recent. On exit the display lists the number of errors. Select the →0 button to clear this list.
2 Error Statistics	To view/clear a list of the ten most frequent errors since list was last cleared. On exit the display lists the number of errors. Select the →0 button to clear this list.
3 Event History	To view/clear the SCSI command event history since it was last reset. Only SCSI commands which affect library operations are recorded. On exit the display lists the number of events. Select the →0 button to clear this list.

Menu Selection	Description
4 Micro-Op Stack	To view a list of operations performed for the last failing SCSI command. These micro operations include position, position and flip, pick, store, load, and unload. The list includes forward and backward operations (media movement, and undo and retry for attempted failure recovery). This log is cleared whenever the system is initialized. This error should be reported to Plasmon for decoding.
4 Network Interface	Allows set up of the library's network interface.
1 IP Address	To view/edit the IP address set for the library.
2 Subnet Mask	To view/edit the subnet mask set for the library.
3 Default Gateway	To view/edit the default gateway set for the library.
5 Offline Operations	Allows basic offline operations.
1 Scan Elements	To scan all elements.
2 Unload Drives	To unload the drives.
3 Park Library	To park the picker before shipping or moving the library. Also, remove all media before moving the library.
4 Test Library	To perform basic sensor and motor tests.
5 Service Drives	To turn a drive off and temporarily terminate the SCSI bus for drive replacement.
6 Restore Drives	To turn a drive on and remove temporary SCSI bus termination after drive replacement.
7 Cabinet Lights	To turn cabinet lights on and off.

Maintenance Mode Menu Overview

Use the Maintenance Mode menu to perform tests on, set up, or configure the library. When performing operations in the Maintenance Mode Library menu, the library is taken off-line. A password is required to enter this mode, or set dip switch one on the main controller to "on" and cycle power.

WARNING

Entering Maintenance Mode disables the power interlock on the rear door so the library can operate with the door open. However this may result in hazardous radiation exposure from the light source in the bar code scanner. Do not stare into the light source.

The following sequence of figures shows the Maintenance Mode menu options.

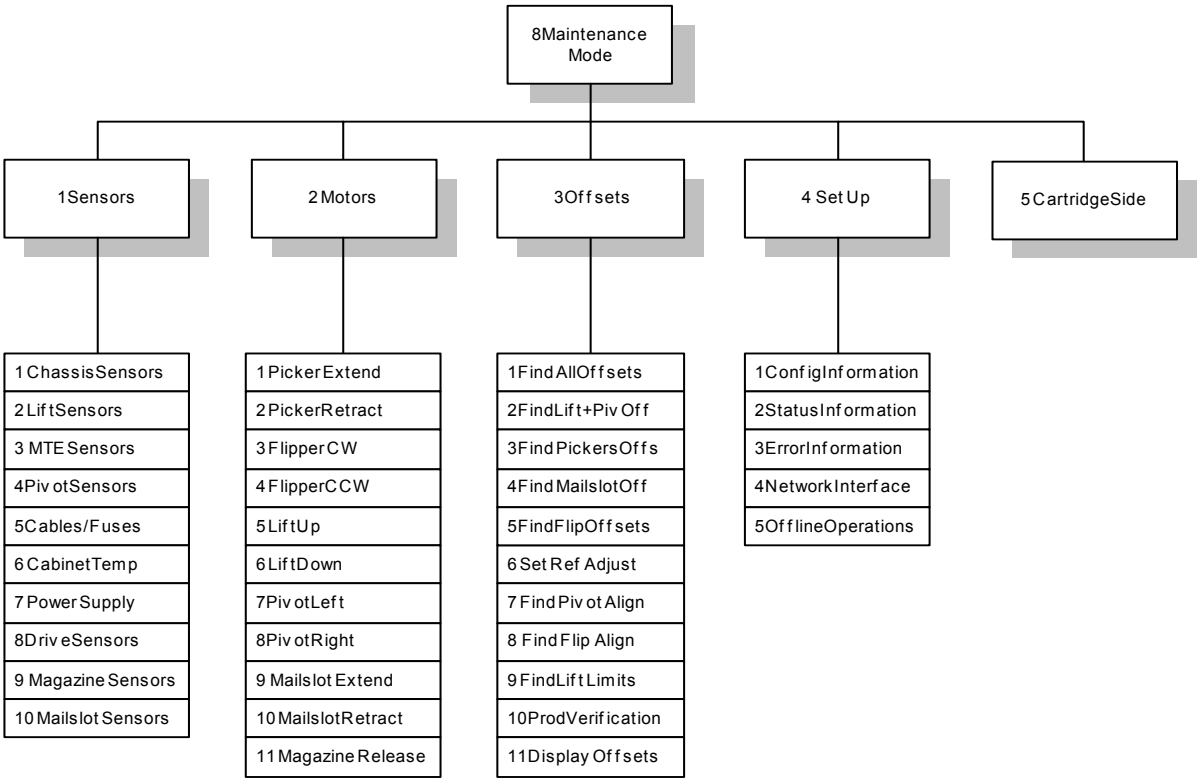


Figure 20. Maintenance Mode Menu Options 1 - 5

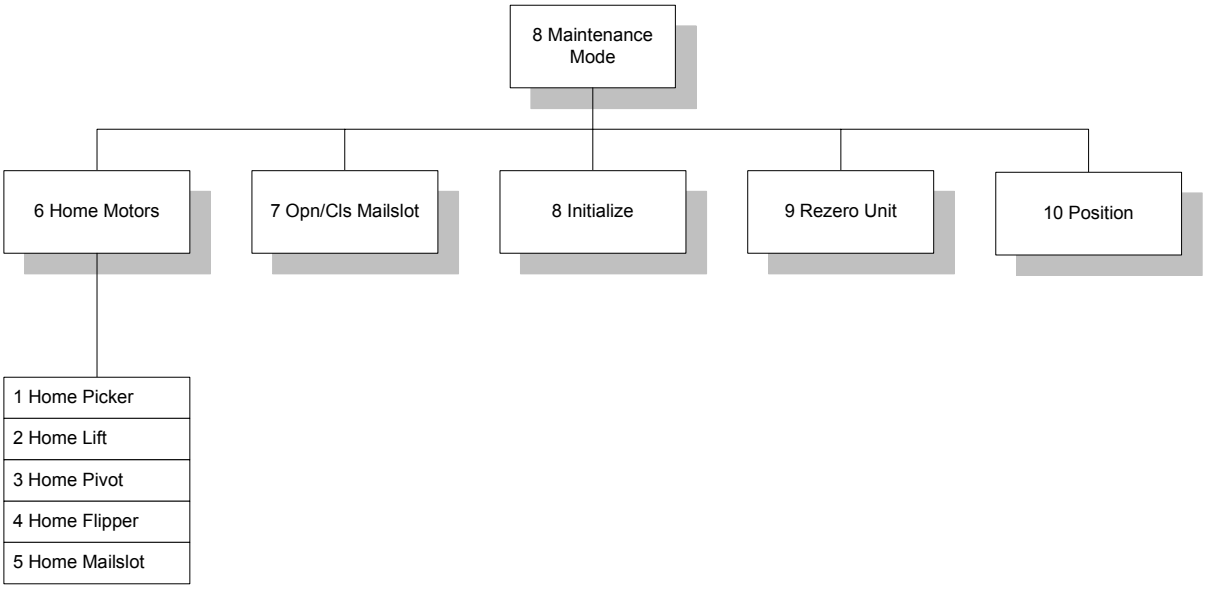


Figure 21. Maintenance Mode Menu Options 6 - 10

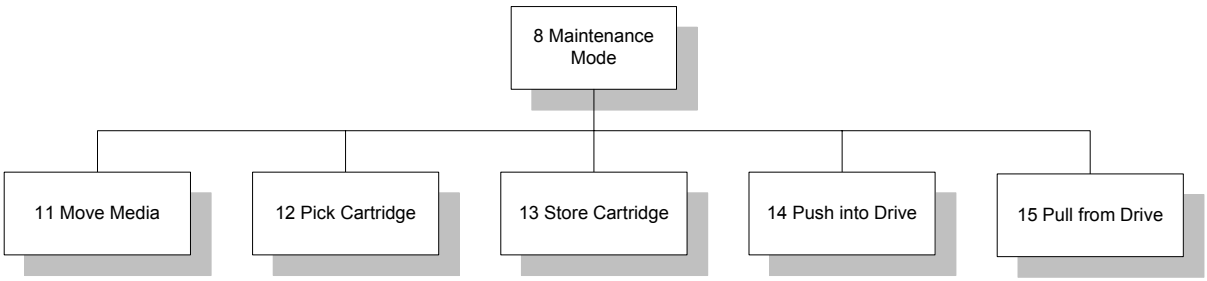


Figure 22. Maintenance Mode Menu Options 11 - 15

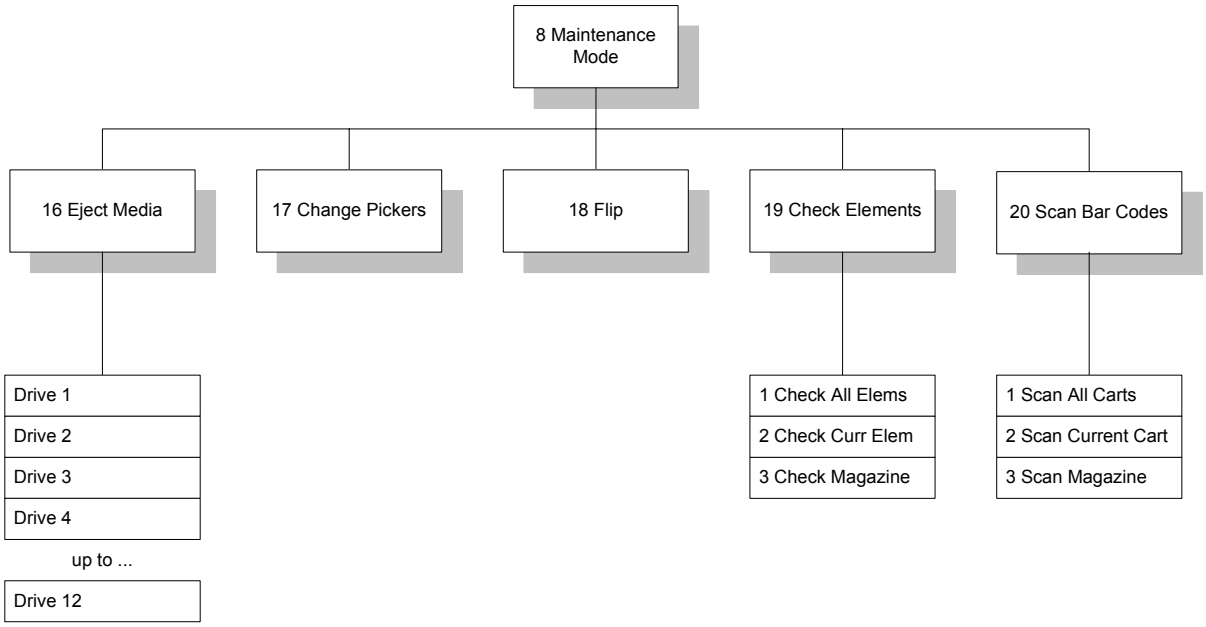


Figure 23. Maintenance Mode Menu Options 16 - 20

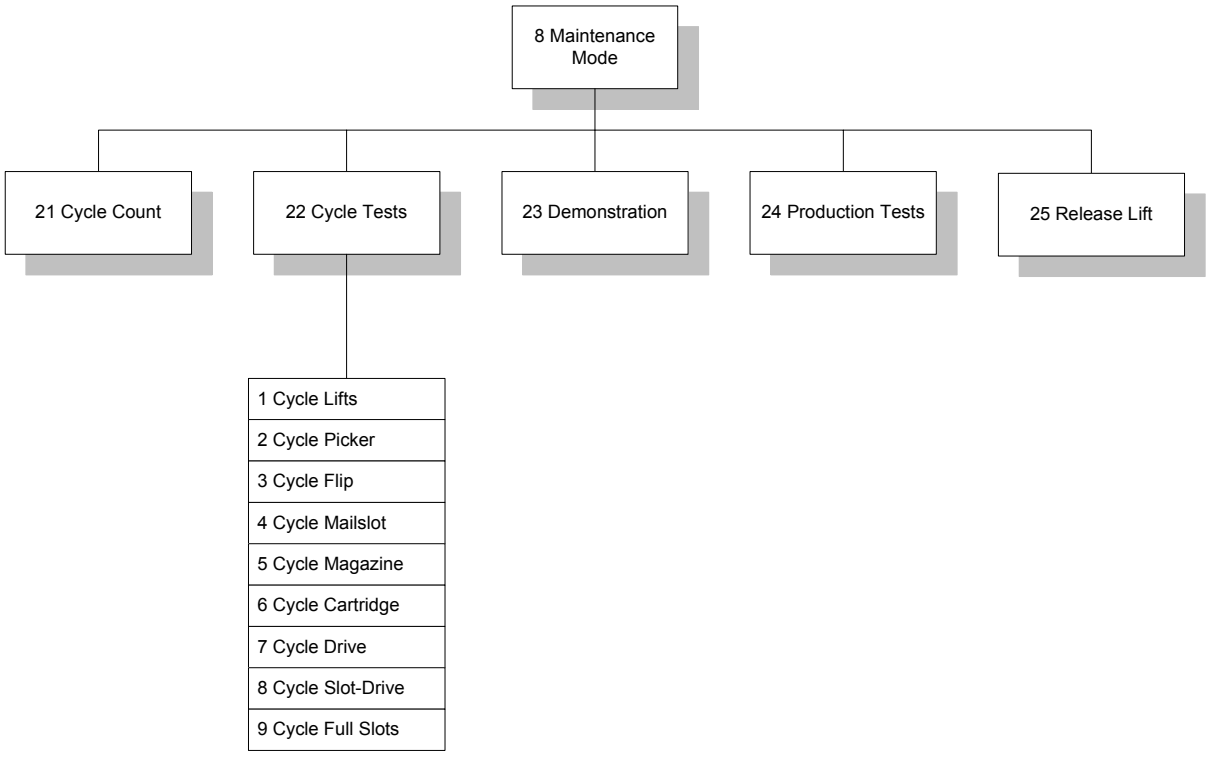


Figure 24. Maintenance Mode Menu Options 21 - 25

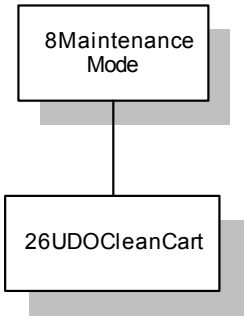


Figure 25. Maintenance Mode Menu Option 26

Table 10. Maintenance Mode Menu Selections

Menu Selection	Description
1 Sensors	Allows selection of individual sensors for manual testing. The state indicator on the LCD display is one when OPTO is blocked, and zero when OPTO is unblocked. There is also an audible tone each time the sensor changes state.
1 Chassis Sensors	
Vert Path-All Cols	All vertical path sensors can be checked here.
Vert Path-Col 1	To test column 1 individually.
Vert Path-Col 2	To test column 2 individually.
Vert Path-Col 3	To test column 3 individually.
Vert Path-Col 4	To test column 4 individually.
Vert Path-Col 5	To test column 5 individually.
Vert Path-Col 6	To test column 6 individually.
Vert Path-Col 7	To test column 7 individually.
Rear Door Open	Detects whether rear door is open or closed.
Reference Sensor	Sets the reference point for all the offset adjustments
Left Exp Installed	Detects the left expansion wing.
Right Exp installed	Detects the right expansion wing.
Main Controller SCSI Terminator Power	Detects internal LVD SCSI cable term power connecting to the main controller SCSI adapter. 1 = OK.
2 Lift Sensors	
Lift Home	Detects home position for the MTE.
Lift Current	Detects current position for the MTE.
Flipper Side A	Detects whether the A side of the MTE is up. 1 = A side is up (sensor is blocked by flipper A side flag).
Flipper Side B	Detects whether the B side of the MTE is up. 1 = B side is up (sensor is blocked by flipper A side flag).
3 MTE Sensors	
Picker 1 Home	Detects home position of picker 1.
Picker 2 Home	Detects home position of picker 2.
Picker Forward	Detects whether picker is in forward position. 1 = forward position, safe to move MTE to another slot.
Reference Sensor	Checks whether the Auto Offset sensor, emitter, and receiver are functional.

Menu Selection	Description
Auto Offset Sensor	To perform auto offsets.
Media Scan Opto	To detect media.
Media Scan Sensor	To detect media. 1 = media present. Located at the front of the MTE, used only during media scan.
UDO Sensor 1	To identify media type in picker 1. (0 = MO media, 1 = UDO media).
UDO Sensor 2	To identify media type in picker 2. (0 = MO media, 1 = UDO media).
4 Pivot Sensors	
Pivot Home	Detects home position of pivot assembly.
Pivot Align	Checks the sensor used to align the pivot with the column.
5 Cables/Fuses	
CJ4: Pivot/Lift/MTE	Monitors connection of pivot cable at CJ4 on main controller board and continuing through the pivot, lift, and MTE interface boards. 1 = proper operation.
CJ5: VP Sensor Enc	Monitors connection of cable from CJ5 on main controller board to the VP interface board. 1 = proper operation.
CJ7: Interlock Ifc	Monitors connection of cable from CJ7 on main controller board to the door interlock and reference sensor (for auto offsets). 1 = proper operation.
CJ12: SCSI Conv Ctl	Monitors connection of cable from CJ12 on main controller board to the SCSI external interface boards. 1 = proper operation.
F1: CAN Bus 24V	Monitors fuse 1 which powers the CAN bus interface at CJ3 with +24 volts on the main controller board. 1 = proper operation.
F2: CAN Bus 5V	Monitors fuse 2 which powers the CAN bus interface at CJ3 with +5 volts on the main controller board. 1 = proper operation.
F3: Lift Cable 24V	Monitors fuse 3 which powers the pivot, lift, and MTE interface at CJ4 with +24 volts on the main controller board. 1 = proper operation.
F4 Lift Cable 5V	Monitors fuse 4 which powers the pivot, lift, and MTE interface at CJ4 with +5 volts on the main controller board. 1 = proper operation.
F5: VP Dec Bd 5V	Monitors fuse 5 which powers the VP decoder interface at CJ5 with +5 volts on the main controller board. 1 = proper operation.
F6: MC SCSI Bd 5V	Monitors fuse 6 which powers the MC SCSI adapter interface connecting at CJ8 with +5 volts on the main controller board. 1 = proper operation.
F9: Ext SCSI Bd 5V	Monitors fuse 9 which powers the SCSI external interface boards connecting at CJ12 with +5 volts on the main controller board. 1 = proper operation.
F10: Lift Motor 24V	Monitors fuse 10 which powers the lift motor driver IC with +24 volts on the main controller board. 1 = proper operation.
F11: Steppers 24V	Monitors fuse 11 which powers all stepper motor ICs with +24 volts on the main controller board. 1 = proper operation.

Menu Selection	Description
6 Cabinet Temp	
xx° C or yy° F	Displays temperature inside the library. Push the ⁂ key a second time for Fahrenheit reading.
7 Power Supply	
5V Supply	Displays voltage from the 5 volt power supply.
12V Supply	Displays voltage from the 12 volt power supply.
24V supply	Displays voltage from the 24 volt power supply.
CJ10: Power Supply IFC	Monitors cable connection from CJ10 on the main controller board to the power distribution board (power supply monitor interface cable). 1 = proper operation.
8 Drive Sensors	
Drive N	Select drive to check sensors.
9 Magazine Sensors	
Magazine in Place	Detects that magazine is present.
Magazine Latched	Detects that magazine is properly latched.
CJ8: Solenoid Cable	Monitors cable connection fromCJ8 on magazine/mailslot board to the magazine sensors and solenoid. 1 = proper operation.
Fuse F3: Solenoid	Monitors fuse 3 which powers the solenoid with +24 volts for the magazine release mechanism. 1 = proper operation.
10 Mailslot Sensors	
Mailslot Open	Detects mailslot open.
Mailslot Closed	Detects mailslot closed.
Media Inserted	Detects presence of media in mailslot via the Media Present sensor.
CJ4: Sensors Cable	Monitors cable connection from CJ4 on magazine/mailslot board to the mailslot sensors. 1 = proper operation.
Fuse F2: Solenoid	Monitors fuse 2 which powers the mailslot stepper motor with +24 volts. 1 = proper operation.
2 Motors	
1 Picker Extend	To move picker forward.
2 Picker Retract	To move picker backward.
3 Flipper CW	To rotate flipper clockwise.
4 Flipper CCW	To rotate flipper counter-clockwise.
5 Lift Up	To move lift upward.

Menu Selection	Description
6 Lift Down	To move lift downward.
7 Pivot Left	To rotate pivot to the left.
8 Pivot Right	To rotate pivot to the right.
9 Mailslot Extend	To extend mailslot.
10 Mailslot Retract	To retract mailslot.
11 Magazine Release	To cause solenoid to release magazine.
3 Offsets	
1 Find All Offsets	To find all offsets and automatically set the correct offset alignments.
2 Find Lift+Piv Off	To find lift and pivot offsets and automatically set the correct offset alignments.
3 Find Pickers Offs	To find picker offsets and automatically set the correct offset alignments.
4 Find Mailslot Offs	To find mailslot offsets and automatically set the correct offset alignments.
5 Find Flip Offsets	To find flipper offsets and automatically set the correct offset alignments.
6 Set Ref Adjust	Not applicable. Used for preproduction models.
7 Find Pivot Align	To find pivot alignment and automatically set the correct alignment.
8 Finf Flip Align	To find flipper alignment and automatically set the correct alignment.
9 Find Lift Limits	To find the lift limits.
10 Prod Verification	To verify that all offsets are within specifications.
11 Display Offsets	To display offset values.
4 Set Up	Allows access to the Set Up Library mode when Maintenance Mode is entered using the DIP switch on the main controller board.
1 Config Information	See the *Set Up Library Menu* section.
2 Status Information	See the *Set Up Library Menu* section.
3 Error Information	See the *Set Up Library Menu* section.
4 Network Interface	See the *Set Up Library Menu* section.
5 Offline Operations	See the *Set Up Library Menu* section.
5 Cartridge Side	To select whether flipping is done in Maintenance Mode cycle tests.
6 Home Motors	
1 Home Picker	To move picker to home position, and verify sensor function.
2 Home Lift	To move lift to home position, and verify sensor function.
3 Home Pivot	To move pivot to home position, and verify sensor function.
4 Home Flipper	To move flipper to home position, and verify sensor function.

Menu Selection	Description
5 Home Mailslot	To move mailslot to home position, and verify sensor function.
7 Opn/Cls Mailslot	Allows opening mailslot by pushing ⛹ key. Push again to close mailslot.
8 Initialize	To initialize the library. This option should be used before running any tests.
9 Rezero Unit	To return all media to original storage locations. This option should be used before running any cycle tests.
10 Position	To move the MTE to a new position.
11 Move Media	To move media to a new location.
12 Pick Cartridge	To cause MTE to pick a media. MTE must be located in front of a storage slot with a media, or it just goes through the motions.
13 Store Cartridge	To cause MTE to place a media in a storage slot. MTE must be located in front of an empty slot, and must have a media, or it just goes through the motions.
14 Push into Drive	To cause MTE to push a media into a drive. MTE must be located in front of an empty drive, and must have a media, or it just goes through the motions.
15 Pull from Drive	To cause MTE to pull a media from a drive. MTE must be located in front of a loaded drive, or it just goes through the motions.
16 Eject Media	To eject media from a selected drive.
1 Drive 1	To select drive.
2 Drive 2	To select drive.
3 Drive 3	To select drive.
4 Drive 4	To select drive.
up to...	
12 Drive 12	To select drive.
17 Change Pickers	To change between upper and lower picker.
18 Flip	To manually flip media.
19 Check Elements	To check empty/full status of elements.
1 Check All Elems	To check empty/full status of all elements.
2 Check Current Elem	To check empty/full status of current elements.
3 Check Magazine	To check empty/full status of magazine.
20 Scan Bar Codes	To scan bar codes.
1 Scan All Carts	To scan bar codes on all media.
2 Scan Current Cart	To scan bar code on current media.
3 Scan Magazine	To scan bar codes on media in magazine.

Menu Selection	Description
21 Cycle Count	To view/reset number of cycles executed in Maintenance Mode. Reset to zero by pushing the →0 key.
22 Cycle Tests	To perform cycle tests. Press the ■ key to stop test.
1 Cycle Lift	To cycle lift. Moves lift up and down, and positions it at random locations. LCD panel displays locations and cycle count.
2 Cycle Picker	To cycle picker in and out.
3 Cycle Flip	To cycle flipper mechanism.
4 Cycle Mailslot	To cycle mailslot open and closed. Test can be set to cycle between 0 and 1000 times in increments of 5.
5 Cycle Magazine	To cycle magazine door open and closed. Test can be set to cycle between 0 and 1000 times in increments of 5.
6 Cycle Cartridge	To cycle a media.
7 Cycle Drive	To cycle drive.
8 Cycle Slot-Drive	To cycle media between a slot and a drive.
9 Cycle Full Slots	To cycle media through all slots.
23 Demonstration	To place library in demonstration mode.
24 Production Tests	Not applicable. For use on factory production floor only.
25 Release Lift	To remove the lift motor voltage so lift assembly drops slowly.
26 UDO Clean Cart	Use only the Plasmon UDO30GB Cleaning Cartridge in UDO30 drives. Use only the Plasmon UDO60 Cleaning Cartridge in UDO60 drives. Follow the instructions on the cartridge case. There is also a demonstration presentation online at: http://www.plasmontech.com/customer/player.html.

APPENDIX A
SPECIFICATIONS

Overall Library Specifications

The following table provides information about the Plasmon G-Series libraries. These specifications are subject to change without notice.

Table 11. G-Series Library Specifications

Specification	G164	G238	G438	G638
Library Capacity (UDO60)	9.8TB	14.2TB	26.2TB	38.2TB
Library Capacity (UDO30)	4.9TB	7.1TB	13.1TB	19.1TB
Library Capacity (MO)	1.5TB	2.2TB	4.0TB	5.8TB
Number of Media Storage Slots	164	238	438	638
Number of Drives	2, 4, 6, 8, 10, or 12	2, 4, 6, 8, 10, or 12	2, 4, 6, 8, 10, or 12	2, 4, 6, 8, 10, or 12
Drive Types Supported	UDO / MO	UDO / MO	UDO / MO	UDO / MO
Library Reliability (MSBF) 1 swap = 1 SCSI exchange	>3.8M	>3.8M	>3.8M	>3.8M
Robotics Avg. Exchange Time	6.1 sec.	6.2 sec.	6.3 sec.	6.4 sec.
Picker Type	dual	dual	dual	dual
Automated Mailslot	single	single	single	single
Magazine	ten slot	ten slot	ten slot	ten slot
Library Interface	LVD, SCSI 2 and SCSI 3 compliant 68-pin high density female connector			
Options To purchase these options or other upgrades, contact a Plasmon Sales office or local distributor.	barcode reader redundant power supply 1 or 2 additional buses			

Specification	G164	G238	G438	G638
Space Requirements Width (in/cm) Height (in/cm) Depth (in/cm) *Allow 3" airflow behind unit and 2" airflow on both sides*	 56/142 70/178 88/224	 56/142 70/178 88/224	 56/142 70/178 88/224	 56/142 70/178 88/224
Dimensions-Stand Alone Width (in/cm) Height (in/cm) Depth (in/cm) Weight (lbs/kg)	 28/71 68/173 36/91 478/217	 28/71 68/173 36/91 500/227	 34/87 68/173 36/91 599/272	 41/104 68/173 36/91 709/322
Dimensions-Shipping Width (in/cm) Height (in/cm) Depth (in/cm) Weight (lbs/kg)	 49/125 76/193 37/94 662/261	 49/125 76/193 37/94 662/261	Expansion Bays 34/86 73/184 34/86 335/152	
Max Power Consumption Max Power Dissipation	532 Watts 1283 BTU/hr.			
Power Requirements Voltage Frequency	 100 to 240 VAC (auto-ranging power supply) 50/60 Hz			
Environmental Operating Temperature Non-Operating Temperature Gradient Temperature Operating Humidity Non-Operating Humidity	 +10 to +32°C (+50 to +90°F) -30 to +60°C (-22 to 140°F) 10°C (50°F) 10 to 90% RH non-condensing 10 to 95% RH non-condensing			

Power Cord Specifications

The 120 VAC power cord shipped with Plasmon libraries meets these criteria:

- The power cord must have a molded NEMA 5-15P male attachment plug on one end.
- The power cord must have a molded IEC type CEE-22 female connector on the other end.
- The power cord must be UL Listed and CSA Certified.

SCSI Cable Specifications

SCSI Cables

Plasmon recommends using SCSI cables that conform to SCSI-3 specifications.

To comply with the regulations and standards listed in this manual, all external SCSI cables used with the library must be properly shielded.

SCSI Cable Length

Plasmon recommends using SCSI cables that conform to SCSI-3 specifications with high density 68-pin connectors. The following table shows the allowable cable lengths.

Table 12. External SCSI Cable Lengths

SCSI Interface	Max Allowable External Cable Length
LVD (with UDO, MO, or mixed drives)	39 ft. (12 m)

NOTE

G-Series libraries without an External SCSI Interface circuit board (not available in the US) still provide an LVD SCSI interface, but have a reduced maximum external cable length of 30 ft. (9.14 m). These models must be UDO only.

SCSI Termination

The Plasmon G-Series libraries are auto-terminated internally. No external termination is required.

APPENDIX B
SCSI BUS INFORMATION

SCSI Bus Configuration

The following tables list the recommended SCSI bus configurations for the G-Series libraries. The figures following each table show diagrams of these bus configurations. Plasmon recommends no more than six drives on a single SCSI bus.

Table 13. Factory Default SCSI ID Settings

Physical Drive Numbers	SCSI IDs		
	Single Bus(1)	Dual Bus(2)	Triple Bus(3)
Robotics	6	6	6
1	0	0	0
2	1	1	1
3	2	0	0
4	3	1	1
5	4	2	0
6	5	3	1
7		2	2
8		3	3
9		4	2
10		5	3
11		4	2
12		5	3

(1) Library Control is always on Bus 1 with SCSI ID 6.
(2) G-Series libraries for OS/400 support two buses only.
(3) Yellow shaded boxes are Bus 1, green shaded are Bus 2, and blue shaded are Bus 3.

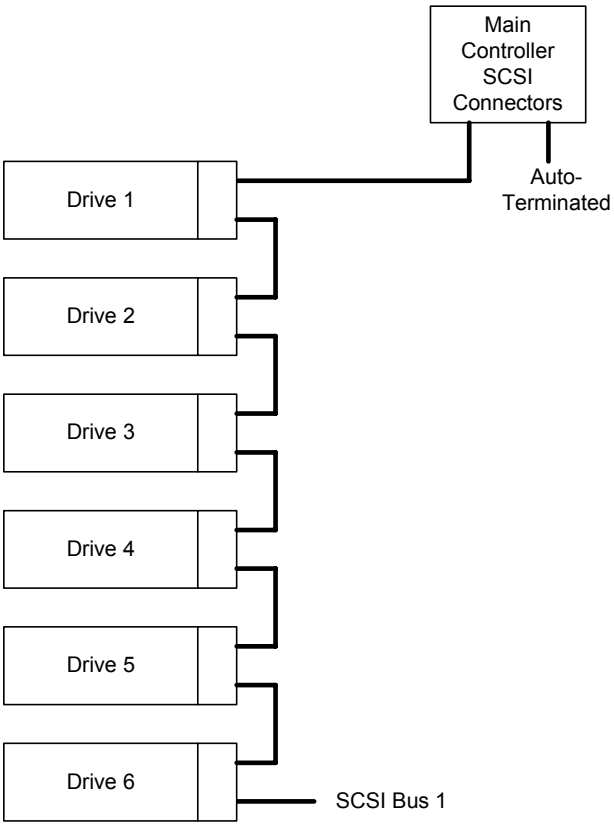


Figure 26. Single SCSI Bus Configuration

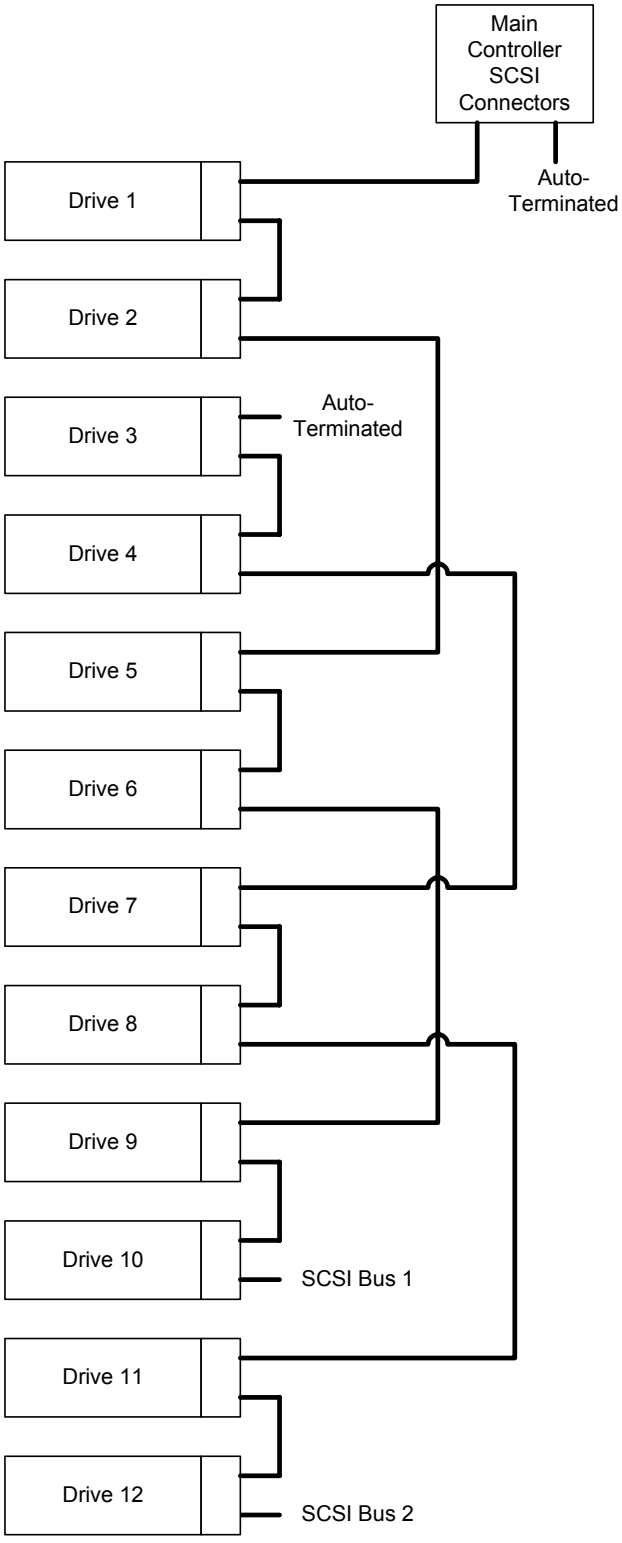


Figure 27. Dual SCSI Bus Configuration

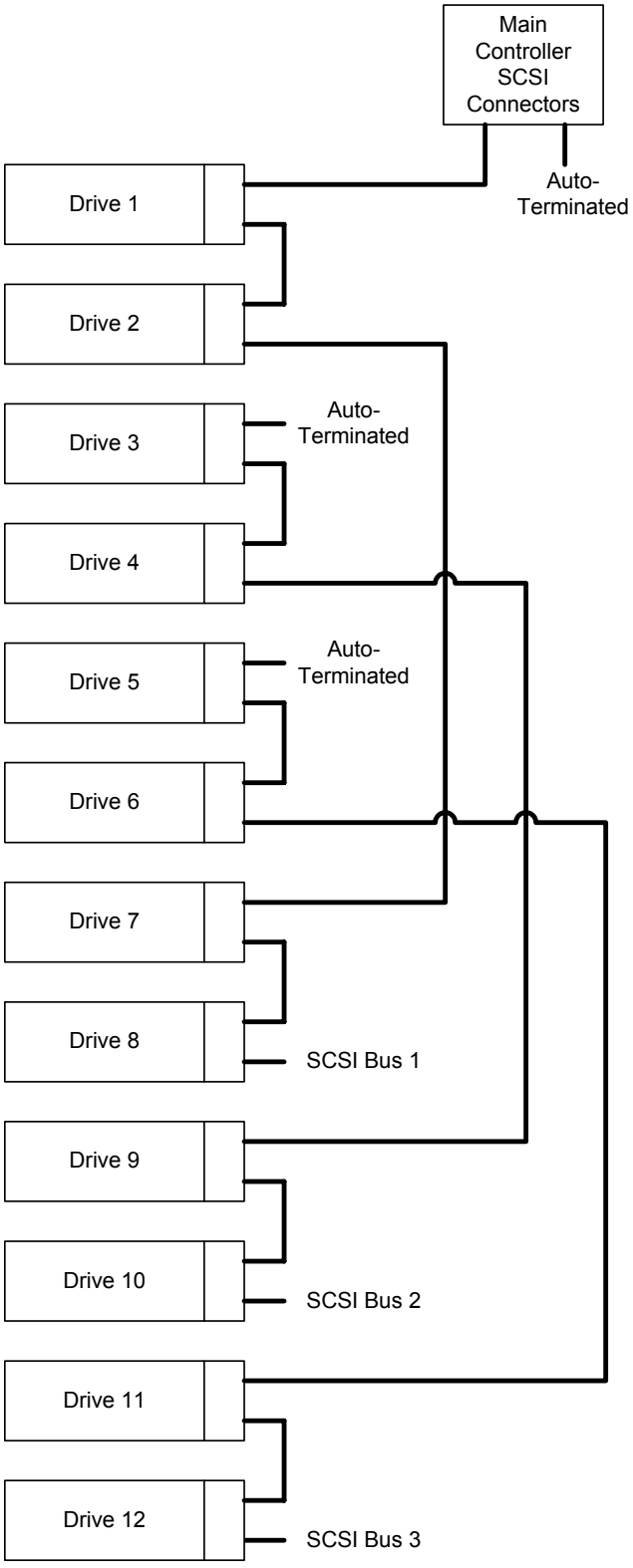


Figure 28. Triple SCSI Bus Configuration

APPENDIX C
SAFETY AGENCY STANDARDS

FCC Notice

This equipment is tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at his own expense.

Shielded cables are required for this device to comply with FCC rules. Use shielded cables when connecting this device to others.

Industry Canada Notice per ICES-003

English: This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of the Industry Canada.

French: Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par l’Industrie Canada.

European Notice

CE This product is in conformity with the following directive.

- EN 55022/CISPR 22, Class A
- EN 55024
- EN 61000-3-2
- EN 61000-3-3

This library system is in conformity with the EMC directive and low-voltage directive.

Australia/New Zealand

This equipment has been tested and complies with AS/NZS 3548.

Japan

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

This is a Class A product based on the standard of the Voluntary Control for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur, in which case, the user may be required to take corrective actions.

Product Safety Standards

This library complies with the following domestic and international product safety standards:

- UL Standard 60950-1, 1st Edition: 2003 Safety of Information Technology Equipment
- CSA Standard C22.2 No. 60950-1-03, Safety of Information Technology Equipment
- IEC 60950-1, 1st Edition: 2001

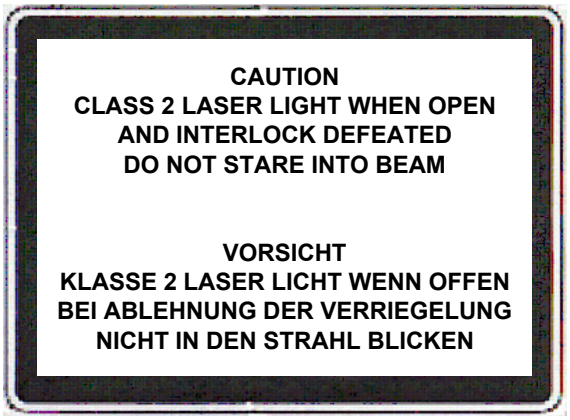
Laser Safety Notice

This library is a Class 1 Laser Product. It has a bar code reader inside the housing and complies with 21 CFR 1010.10, 1040.11, and IEC 60825-1:1993+A1:1997+A2:2001 as a Class 1 Laser product. The maximum radiation power output of the MS-3 bar code reader is 500µW. The maximum radiation power output of the VS-310 bar code reader is 1mW, with a scan rate of 60 scans/sec - high density and 100 scans/sec low density.

The maximum output power and wavelength of the laser in the Plasmon UDO30 and UDO60 drive is 65mW (403-413nm), the maximum output and wavelength of the laser in the Sony SMO-F551-W5 drive is 60mW (675-695 nm), and the maximum output and wavelength of the laser in the Sony SMO-F561 drive is 40mW (655-667nm).

WARNING

Use of controls or adjustments, or performance of procedures other than those specified herein, may result in hazardous radiation exposure.



These laser product labels are placed on the front and back of the library, inside the front and back doors.

WARNING

The safety interlock on the back door of the library is designed to stop library operation when the door is opened. Defeating this interlock may result in hazardous radiation exposure.

CDRH Regulations

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.

Lithium Battery

The Main Control Board and the Front Control Panel contain a lithium battery which could explode if incorrectly replaced. Replace only with a qualified replacement battery. Return the old battery to the manufacturer for disposal or dispose of in accordance with local regulations for the disposal of lithium batteries.

“ATTENTION: IL Y A DANGER D’EXPLOSION S’IL Y A REPLACEMENT INCORRECT DE LA BATTERIE. REMPLACER UNIQUEMENT AVEC UNE BATTERIE DU MEME TYPE OU D’UN TYPE RECOMMANDE PAR LE CONSTRUCTEUR. METTRE AU REBUT LES BATTERIES USAGEES CONFORMEMENT AUX INSTRUCTIIONS DU FABRICANT.”

Vorsicht! Explosionsgeahr bei unsachgemabem Austausch der batterie. Ersatz nur durch denselbel oder einen vom Hersteller empfolhenen gleichwertigen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

Power Cord Set Selection

The voltage rating and the current rating of the power cord set shall be higher than the rated voltage and current of this unit. The voltage of the power cord set shall be higher than the power source.

For the U.S. and Canada:

Power cord must be UL listed and CSA labeled. Type SJT, SVT, ST, SJO or SO, 3-conductors, No. 18 AWG, rated 125v, 10A

For Germany and continental Europe:

STROMANFNAHME: 100-240 VAC, 50/60 Hz, 6A.

Für eine 230V-Anwendung, ist eine harmonisierte <HAR> konfektionierte Leitungsschnur, Typ H05vvf3G1.00, die für 250V/10A oder die Gleichwertigkeit geeognet ist, zu benutzen.

Power Supply

The G-Series library power supplies are certified for China Compulsory Product Certification (CCC).

MOV Protection (all models)

CAUTION

A HiPOT test is applied to the library during manufacture. To avoid damage to the MOVs, do not HiPOT the library again unless the two fuses next to the external AC connector on the lower back of the library are first removed to take the MOVs out of the circuit.

In Norway

Apparatet må tilkoples jordet stikkontakt.

In Sweden

Apparaten skall anslutas till jordat uttag.

In Finland

Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan.

APPENDIX D
ERROR CODES

In the event of an error while on-line, the library retries the operation that failed. If this operation fails, the library attempts to return the media to their location before the operation started, and sends an error code to the host computer. This error code is displayed on the front panel of the library.

The following error codes are provided to assist in detecting the cause or finding a corrective action for a library error. Note the error code number displayed on the front panel, then find the corresponding error code from the following table.

Error	Sub Code	Error Description	Suspect Area	Corrective Action
00		Unknown error		No additional information
01		Flash checksum failure	Found during SCSI send diagnostics	Replace main board, or flash firmware download procedure may have to be performed
	1	Found during SCSI send diagnostics		
	2	Detected while unit was monitoring it's internal integrity		
02		NVRAM failure	Main controller circuit board	
0A		Firmware error: bad element code	Firmware	Download new firmware with the latest version
0C		Firmware error: operation stack overflow	Firmware	Download new firmware with the latest version
	1	Recording operation		
	2	Undoing operation		
0D		Firmware error: bad operation stack index	Firmware	Download new firmware with the latest version
0e		Main firmware download failure		Try to reprogram or replace main controller PWA

Error	Sub Code	Error Description	Suspect Area	Corrective Action
0f		DSP firmware down-load failure		Try to reprogram or replace main controller PWA
1A		Drive not installed	Drive interface cables	Replace drive module or drive interface PWA
	1	Trying to position to drive		
	2	Checking to move to or from a drive		
	3	Drive testing		
	4	During prepare for cycle testing		
1B		Source is empty	Host software error, NVRAM or error recovery failure	
	1	During check move (slot or drive is empty)		
	2	During check move (mailslot is empty)		
	3	First destination is empty (SCSI exchange com-mand)		
	4	Forced error from the error test com-mand (command sent using the serial port)		
1C		Destination is full	Host software error, NVRAM or error recovery failure	
	1	Picker stalled early in the store process		
	2	Trying to empty picker		
	3	During check move (slot or drive is empty)		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	4	During check move (mailslot is empty)		
	5	Second destination is full (SCSI exchange command)		
1D		Element unexpectedly empty	Picker motor offsets	
	1	Media did not block VP sensor during a pick		
	3	During prepare for cycle testing		
1E		Element unexpectedly full	Host software error, NVRAM or error recovery failure	
	2	Media in drive (trying to return a media to a drive)		
	3	During prepare for cycle testing		
1F		Picker is full	Operator error or media transport element	Check for mechanical damage if media is in transport element
	1	VP sensor blocked moving to the pick position		
	2	VP sensor blocked moving to the unload drive position		
	3	Both pickers are not empty to perform the move (during check move)		
	4	During check move		
	5	Exchange media (SCSI command)		
20		Pick media failure	Media transport element picker fingers, picker motor, offsets	Run pivot and picker offsets

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	1	Picker fingers disengaged from media after starting to pick media		
	2	Pick media retry aborted		
21		Store media failure	Picker motor, vertical offset adjustment, or media storage element	
	1	Media did not block VP sensor during a store		
	2	Picker stalled during a store media process	Offsets, picker motor, forward position sensor	
	3	Picker fingers did not release from the media, or the picker stalled during a media store operation		
23		Drive not ready	Drive cable, Drive or media	Check connections, replace cable or media
24		Drive load failure	Bad media drive or media transport element	Check media transport element for mech failure, replace drive
	1	Media not seen in picker		
	2	Pick fingers did not release from media		
	3	Drive did not pull in the media		
	4	Drive load retry aborted		
25		Drive unload failure	Offsets, picker fingers	
	1	Media disengaged from picker		
	2	Pick fingers did not grab media		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	3	Unload drive retry aborted		
	4	Unload drive retry (before the completion status was even set to started)		
26		Eject failure	Bad media, drive or drive interface PWA	
	1	Eject time out failure		
	2	Changer ejects are not allowed (during retry)		
	3	Waiting for drive eject status		
28		Attempt to load MO media in UDO drive	Wrong media for drive	
29		Attempt to load UDO media in MO drive.	Wrong media for drive	
2b		Cannot export media	Mailslot sensor or host software	
	1	Checking for an empty mailslot		
	2	Could not return a media to it's original slot, tried to export media		
	3	Trying to return the media to the mailslot		
2c		Mailslot is open	Mailslot open sensor, operator error	Close mailslot if open
	1	During check move (importing)		
	2	During check move (exporting)		
	3	Checking bar code		
	4	Trying to process the prevent/allow removal command		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	5	During SCSI move media command		
	6	During SCSI exchange command		
	7	Positioning to mailslot		
2d		Media removal prevented	Host software	
	1	Open/close mailslot (SCSI command)		
	2	Move media (SCSI command)		
	3	Exchange media (SCSI command)		
2f		Pivot failure	Pivot motor, pivot cable, pivot sensors	Check connections and sensors, replace motor
	1	Pivot is losing position accuracy		Re-run auto calibration
	2	Completion status from DSP		
32		Lift position Failure	Lift motor	
	1	Destination lift position is invalid	Firmware	Download new firmware with the latest version
	2	During lift position lift time-out		
	3	Position retry aborted		
33		Lift blocked	Vertical path sensor or media protruding	Check for media protruding from storage slot, replace sensor
	1	Picker not in the blocked column		
	2	Picker not in front of the blocking element, but it is in the blocked column		
	3	Media is blocking VP sensor after storing media		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	4	Media is blocking VP sensor after picking from a drive (during initialize)		
	5	Initialize was not able to unblock the VP sensors		
	6	VP blocked during lift positioning (if column is identified as 0, the blockage was momentary		
	7	VP blocked trying to return a media to its last known location		
	8	Lift is not in the blocking column (during initialize)		
35		Flip failure	Flip motor or gear	Check gear on flip motor shaft, replace flip motor
	1	Flip is losing position accuracy		Re-run auto calibration
	2	During position lift		
	3	Flip stalled (neither flip sensor is blocked)		
	4	Completion status from DSP		
	5	wrong side of flipper is up		
37		Flip Align Fail		
	1	Flip align fail	Too much gear backlash or loose flip gear	
3B		Picker position failure	Picker motor, fingers jammed or offsets	Check for mechanical failure, replace media transport element
	1	Completion status from DSP		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	2	Lift is not homed when trying to position the picker		
	3	Bad picker position code		
	4	Picker home sensor is not blocked		
	5	Picker home sensor is blocked unexpectedly		
	6	Picker stalled while retracting		
	7	Picker stalled while moving out to pick a media. This problem is detected when the picker returns to the home position		
	8	Picker tripped the home sensor unexpectedly moving to the forward position after storing a media. (storage slot is unexpectedly full)		
3C		Swap picker failure	Selector nut or pawl spring	Check for mechanical failure, replace media transport element
	1	Could not change the active picker		
3F		Slider misposition	Slider motor or fingers jammed	Check for mechanical failure, replace media transport element
	1	Picker fingers are in a danger zone for moving the lift		
	2	Picker is not blocking the picker forward position sensor when trying to move the lift		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
40		Flip align fail		
	1	Flip align fail	Too much gear backlash or loose flip gear	
43		Mailslot open failure	mailslot motor or sensors	
	1	The "IN" (retracted) position sensor is still blocked. The motor did not move		
	2	The motor stalled during movement		
44		Picker not at drive	Operator error	
	1	Attempting to load a drive		
	2	Attempting to unload a drive		
45		Element scan failure	Lift cable or lift motor	Check connections, replace cable, or lift motor
	1	Failed to move the lift motor		
	2	Invalid element (media present check)	Firmware	Download the new firm-ware with the latest version
46		MO media, but no MO drive		
47		UDO media, but no UDO drive		
49		Bar code reader is not installed		
4a		Rear door open	Rear door sensor or cable	Check sensor and cable
	1	Doing background process checking		
	2	Checking if library is ready for motor movement		
	3	Trying to initialize library		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
4b		Bar code read failure	Bar code reader or labels	Check that labels from media have not come off
	1	Attempting to read the bar code of an invalid element	Firmware	
	2	Trouble reading bar code	Bar code labels	
4e		Drive not responding	Drive interface PWA	Replace drive interface PWA
	6	Waiting on drive spin down signal to be asserted		
	7	Waiting on drive eject signal to be asserted		
52		Mailslot close fail	Mailslot in/out sensors or motor	
	1	The "OUT" (extended) position sensor is still blocked. The motor did not move		
	2	The motor stalled during movement		
54		Invalid drive type	Drive module or drive interface PWA	Check module connections, replace drive interface PWA
55		Drive SCSI address conflict	Host software or configuration settings	Insure all SCSI IDs are unique
	1	Address conflict with changer		
	2	Address conflict with another drive		
58		Mailslot jammed	Mailslot Assembly: Sensors, Rails, Mailslot Motor, Belt Tension, Cables	Verify that motor is driving leadscrew correctly; Verify the Carriage is not binding on Rails; Repair or replace mailslot
	1	At closed position		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	2	At open position		
	3	During open operation		
59		Power supply fail	Indicated power supply	Replace indicated power supply
	1	Power supply is removed		
	2	Power supply fan has failed		
	3	Power supply power failure		
5a		Cable connect failure		Check cable connections
	1	CJ3 to front panel	Main controller PWA	
	2	CJ4 to pivot, lift, MTE	Main controller PWA	
	3	CJ5 to VP decoder PWA	Main controller PWA	
	4	CJ6 configuration plug	Main controller PWA	
	5	CJ7 interlocks, reference sensor	Main controller PWA	
	6	CJ10 to power distribution PWA	Main controller PWA	
	7	CJ12 to external SCSI interface	Main controller PWA	
	1	CJ7 to SCSI isolator PWA	2 to 16 drive controller PWA	
	2	CJ6 board address plug	2 to 16 drive controller PWA	
	1	CJ1 SCSI to external SCSI interface	17 to 31 (SCSI isolator)	
	1	CJ4 mailslot sensors	32 to 35 (mailslot/ magazine)	
	2	CJ6 board address plug and power	32 to 35 (mailslot/ magazine)	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	3	CJ8 magazine sensors and solenoid	32 to 35 (mailslot/ magazine)	
	1	CJ4 pass through sensors	36 to 39 (pass through)	
	2	CJ6 board address plug	36 to 39 (pass through)	
	1	CJ3 or CJ4 SCSI configure or connection	40 (MC SCSI adapter)	
	1	CJ2 VP detectors	41 ((VP decoder)	
5b		Fuse overload		Turn unit off for ten seconds to reset fuses
	1	F1 fuse +24V interface CJ3 to CAN bus	Main controller PWA	
	2	F2 fuse +5V interface CJ3 to CAN bus	Main controller PWA	
	3	F3 fuse +25V interface CJ4 to pivot, lift & MTE	Main controller PWA	
	4	F4 fuse +5V interface CJ4 to pivot, lift & MTE	Main controller PWA	
	5	F5 fuse +5V interface CJ5 to VP decoder	Main controller PWA	
	6	F6 fuse +5V interface CJ8 to MC SCSI	Main controller PWA	
	7	F7 fuse +12V interface CJ8 to MC SCSI	Main controller PWA	
	8	F9 fuse +5V interface CJ12 to external SCSI	Main controller PWA	
	9	F10 fuse +24V for lift motor. Interface CJ4 to pivot and lift	Main controller PWA	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	10	F11 fuse for stepper motors. Interface CJ4 to pivot, lift & MTE	Main controller PWA	
	1	F1 fuse +12V interface CJ4 to drive module fan	2 to 16 drive controller	
	2	F3 fuse +24V for drive power control switches	2 to 16 drive controller	
	1	F1 fuse +5V terminator power to drive module CJ2	17 to 31 SCSI isolator	
	2	F2 fuse +5V terminator power for LVD SCSI CJ1	17 to 31 SCSI isolator	
	1	F2 fuse +24V for mailslot stepper motor CJ7	32 to 35 mailslot magazine	
	2	F3 fuse +24V for magazine solenoid CJ8	32 to 35 mailslot magazine	
	1	F2 fuse +24V for pass through stepper motor CJ7	36 to 39 pass through	
	1	F1 fuse +5V terminator power for LVD SCSI CJ2	40 MC SCSI adapter	
	1	F1 fuse +5V interface CJ7 for power to mailslot PWA	42 power distribution	
	2	F2 fuse +5V interface CJ7 for power to RMI board	42 power distribution	
	3	F3 fuse +24V interface CJ7 for power to mailslot PWA	42 power distribution	
	4	F4 fuse +24V interface CJ7 for cabinet cooling fans	42 power distribution	
5c		Circuit board fail		Replace PWA

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	1	FLASH checksum	Main controller PWA	
	2	NVRAM failure	Main controller PWA	
	3	Main CPU internal failure	Main controller PWA	
	4	DSP internal failure	Main controller PWA	
	5	DSP to main CPU communication failure	Main controller PWA	
	6	Lift current monitor	Main controller PWA	
	7	Thermal sensor failure	Main controller PWA	
	8	Crystal failure	Main controller PWA	
	1	CPU internal failure	2 to 16 drive controller	
	2	I/O loopback test failure	2 to 16 drive controller	
	3	Unexpected reset (watchdog)	2 to 16 drive controller	
	4	Communication failure, board stops responding to poll	2 to 16 drive controller	
	1	CPU internal failure	32 to 35 mailslot magazine	
	2	I/O loop back test failure	32 to 35 mailslot magazine	
	3	Unexpected reset (watchdog)	32 to 35 mailslot magazine	
	4	Communication failure, board stops responding to poll	32 to 35 mailslot magazine	
	5	Thermal sensor / EEPROM failure	32 to 35 mailslot magazine	
	1	CPU internal failure	36 to 39 pass through	
	2	I/O loop back test failure	36 to 39 pass through	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	3	Unexpected reset (watchdog)	36 to 39 pass through	
	4	Communication failure, board stops responding to poll	36 to 39 pass through	
	1	SCSI chip failure	40 MC SCSI adapter	
	2	I/O loop back test failure	40 MC SCSI adapter	
	3	FIFO failure	40 MC SCSI adapter	
	1	Decoder control failure	41 ((VP decoder)	
	1	Supply monitor failure	42 power distribution	
	1	CPU internal failure	58 front panel interface	
	2	NVRAM failure	58 front panel interface	
	3	Unexpected reset (watchdog)	58 front panel interface	
	4	Communication failure board stops responding	58 front panel interface	
	5	Real-time clock failure	58 front panel interface	
	6	LCD failure	58 front panel interface	
	1	Failed margin test	59 - 76 VP emitter/ detector	
	2	Emitter or detector failure	59 - 76 VP emitter/ detector	
	3	Blocked response time	59 - 76 VP emitter/ detector	
	4	Unblocked response time	59 - 76 VP emitter/ detector	
5d		Drive overheat warning	Drive	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
5e		Drive shutdown due to overheat	Drive	
5f		Drive shutdown due to low fan speed	Drive module fan	
63		Drive module low fan speed	Drive module fan	
64		Out-of-range power supply voltages		
	1	5V power supply		
	2	12V power supply		
	3	24V power supply		
65		Main Controller SCSI term power	Internal SCSI cable or attached circuit board	
66		Mailslot position failure	Mailslot interface PWA	
67		Pass-through position failure	Pass-through interface PWA or pass-through motor	
	1	Completion status from DSP		
	2	Motor did not move sending pass through		
	3	Motor stalled while moving sending pass through		
	4	Motor did not move recalling pass through		
	5	Motor stalled while moving recalling pass through		
68		Position time-out mailslot	Mailslot interface PWA	
69		Position time-out, pass through	Pass-through interface PWA	
70		Comm time-out DSP	Main control PWA	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	1	Commanding DSP		
	2	Waiting for the lift to complete		
	3	Waiting for the picker to complete		
	4	Waiting for the pivot to complete		
	5	Waiting for the flip to complete		
	6	Reading flip sensor status		
	7	Waiting for multiple motor axis to complete their movements		
71		CAN time-out drive	1 to 12 drive interface PWA	Replace drive interface PWA
	1	Checking drive interface board (self test)		
	2	Getting drive status		
	3	Powering drive off		
	4	Powering drive on		
	5	Changing drive ID		
	6	Setting drive options		
	7	Sending maintenance command to a drive		
	8	Sending set configuration to a drive		
	9	Sending parameter bytes to a drive		
	10	Powering off module		
	11	Powering on module		
	12	Resetting drive interface board		
	13	Enabling/disabling SCSI isolation board		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	14	Blinking drive LEDs		
	15	Turning on/off drive LEDs		
	16	Waiting for drive ready		
	17	Starting drive spin down		
	18	Ejecting media from a drive		
	19	Reading fan tachometer		
	20	Getting drive module temperature		
72		CAN time-out mailslot	Mailslot PWA	Replace mailslot PWA
	1	Reading sensors		
	2	Positioning motor		
	3	Stepping motor in motor test		
	4	Trying to reduce holding torque on motor		
	5	Reading stepper motor count		
	6	Zeroing stepper motor count		
73		CAN time-out magazine	Mailslot/magazine PWA	Replace mailslot/magazine PWA
	1	Checking for mailslot board		
	2	Reading sensors		
	3	Turning on access LED		
	4	Turning off access LED		
	5	Releasing magazine latch		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	6	Reading cabinet temperature		
74		CAN time-out passthru	Pass-through PWA	Replace the pass-through PWA
	1	Reading sensors		
	2	Positioning pass through mechanism		
	3	Stepping motor in motor test		
	4	Trying to reduce holding torque on motor		
	5	Reading stepper motor count		
	6	Zeroing stepper motor count		
	7	Checking for pass through board		
75		SCSI bus not isolated for service	SCSI communication lockup, SCSI isolator PWA or drive interface PWA	SCSI bus may be frozen in a busy state
78		Mailslot not installed		Check cable connections to mailslot PWA. Replace mailslot PWA
80		Magazine not installed	Mailslot/magazine PWA or magazine in place sensors	
	1	Trying to position to magazine		
	2	No magazine interface board found		
	3	During checking move		
	4	Checking element status		
	5	Checking bar code		
81		Magazine not latched	Magazine latch sensor or solenoid	

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	1	Trying to position to magazine		
	2	During checking move		
82		Magazine release prevented	Operator or host software	
84		Magazine release fail	Solenoid or latch sensor	
90		Flip offset failure	MTE	Replace MTE
	1	Horizontal flip position could not be found		
	2	Flip steps changing MTE position by too much		
	3	Flip offset too many counts less than nominal		
	4	Flip offset too many counts greater than nominal		
	5	Flip offset less than negative physical boundary count		
	6	Flip offset greater than positive physical boundary count		
91		Pick offset failure	Hard Stop in Chassis, Picker in MTE, Picker Home Sensor in MTE, MTE	Verify Hard Stop in Chassis is Installed; Verify Picker Home Sensors are working correctly; Verify Picker is not binding in MTE; Repair or replace MTE
	1	Pick offset too many counts less than nominal		
	2	Pick offset too many counts greater than nominal		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
92		Lift offset failure	Lift Home Flag in Chassis, Lift Home Sensor on Lift Interface PWA, Cables, MTE	Verify Lift Home Flag is not damaged; Verify Lift Home Sensor is not damaged; Verify Lift Home Sensor working correctly; Verify that there is no interference that could block any of the other optical interrupters on the Lift Interface PWA; Replace MTE
	1	Lift offset too many counts less than nominal		
	2	Lift offset too many counts greater than nominal		
	3	Lift offset less than negative physical boundary count		
	4	Lift offset greater than positive physical boundary count		
93		Pivot Offset failure	Pivot Home Flag in Chassis, Pivot Home Sensor, Pivot PWA, Cables, MTE	Verify Pivot Home Flag is not damaged; Verify that Pivot Home Sensor is not damaged; Verify that Pivot Home Sensor is working correctly; Replace MTE
	1	Pivot offset too many counts less than nominal		
	2	Pivot offset too many counts greater than nominal		
	3	Pivot offset less than negative physical boundary count		
	4	Pivot offset greater than positive physical boundary count		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
94		Offset target fail	Auto Offset Target, Auto Offset Sensor within MTE, cables, MTE	Verify Auto Offset Target is not damaged and has background installed if applicable; Verify Auto Offset Sensor is operating correctly; Repair or replace MTE
	1	Target could not be found		
	2	Target horizontal position found crudely, but not with fine resolution		
	3	Target vertical position found crudely, but not with fine resolution		
	4	Reference target not found		
95		Offset reference fail	Reference Detector(s) in chassis, cables, MTE	Verify Reference Detectors are working correctly; Replace MTE
	1	Reference could not be found		
	2	Reference vertical position found crudely, but not with fine resolution		
	3	Reference horizontal position found crudely, but not with fine resolution		
96		Mailslot jammed	Mailslot Assembly: Sensors, Rails, Mailslot Motor, Belt Tension, Cables	Verify that motor is driving leadscrew correctly; Verify the Carriage is not binding on Rails; Repair or replace mailslot
	1	Open sensor not covered enough for reliable operation		

Error	Sub Code	Error Description	Suspect Area	Corrective Action
	2	Mailslot has over traveled in the open position		
C1	01	Drive eject failure, general	Bad media, drive, or drive interface CB	
C2	02	Drive eject failure, WaitDriveEjected failed	Bad media, drive, or drive interface CB	
F7		SCSI parity error	SCSI cable	Check for conflicting SCSI ID's
F9		Abort message received	SCSI cable	Check for conflicting SCSI ID's
FD		Host communica-tion time-out	SCSI cable	Check for conflicting SCSI ID's

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Contact your service provider directly. If Plasmon is your service provider, please have the following information available when calling:

- Serial number
- Description of failure
- System information
  - Computer type and SCSI adapter
  - Software configuration
  - Software and version number

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